-- STATE OF NORTH CAROLINA--
DEPARTMENT OF TRANSPORTATION
RALEIGH, N.C.

STEP 2 PROPOSAL

REVISED 10-21-04

DATE AND TIME OF BID OPENING: **OCTOBER 26, 2004** AT **10:00 AM**

CONTRACT ID: C 201320

WBS ELEMENT NO. 112.104401

FEDERAL-AID NO. ER-NC05(2)

COUNTY: HAYWOOD

ROUTE NO. I-40

MILES: 0.412

LOCATION: I-40 BETWEEN MILE MARKERS 3 AND 4

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND RETAINING WALL

NOTICE:

ALL PROPOSERS SHALL COMPLY WITH ALL APPLICABLE LAWS REGULATING THE PRACTICE OF GENERAL CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA WHICH REQUIRES THE PROPOSER TO BE LICENSED BY THE N.C. LICENSING BOARD FOR CONTRACTORS WHEN BIDDING ON ANY NON-FEDERAL AID PROJECT WHERE THE BID IS $30,000 OR MORE, EXCEPT FOR CERTAIN SPECIALTY WORK AS DETERMINED BY THE LICENSING BOARD. PROPOSERS SHALL ALSO COMPLY WITH ALL OTHER APPLICABLE LAWS REGULATING THE PRACTICES OF ELECTRICAL, PLUMBING, HEATING AND AIR CONDITIONING AND REFRIGERATION CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA.

_____ 5% BID BOND OR BID DEPOSIT REQUIRED

_____

PROPOSAL FORM FOR THE CONSTRUCTION OF CONTRACT NO. C201320

IN HAYWOOD COUNTY NORTH CAROLINA

Date_____ 20___

DEPARTMENT OF TRANSPORTATION,

RALEIGH, NORTH CAROLINA

The Bidder has carefully examined the location of the proposed work to be known as Contract No. C201320; has carefully examined the plans and specifications, which are acknowledged to be part of the proposal, the special provisions, the proposal, the form of contract, and the forms of contract payment bond and contract performance bond; and thoroughly understands the stipulations, requirements and provisions. The undersigned bidder agrees to bound upon his execution of the bid and subsequent award to him by the Board of Transportation in accordance with this proposal to provide the necessary contract payment bond and contract performance bond within fourteen days after the written notice of award is received by him. The undersigned Bidder further agrees to provide all necessary machinery, tools, labor, and other means of construction; and to do all the work and to furnish all materials, except as otherwise noted, necessary to perform and complete the said contract in accordance with the 2002 Standard Specifications for Roads and Structures by the dates(s) specified in the Project Special Provisions and in accordance with the requirements of the Engineer, and at the unit or lump sum prices, as the case may be, for the various items given on the sheets contained herein.

The Bidder shall provide and furnish all the materials, machinery, implements, appliances and tools, and perform the work and required labor to construct and complete State Highway Contract No. C201320

In Haywood County, for the unit or lump sum prices, as the case may be, bid by the Bidder in his bid and according to the proposal, plans, and specifications prepared by said Department, which proposal, plans, and specifications show the details covering this project, and hereby become a part of this contract.

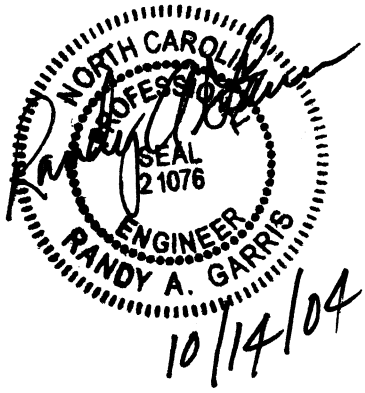
The published volume entitled "North Carolina Department of Transportation, Raleigh, Standard Specifications for Roads and Structures, January 2002 with all amendments and supplements thereto, is by reference incorporated into and made a part of this contract; that, except as herein modified, all the Construction and work included in this contract is to be done in accordance with the specifications contained in said volume, and amendments and supplements thereto, under the direction of the Engineer.

If the proposal is accepted and the award is made, the contract is valid only when signed either by the Contract Officer or such other person as may be designated by the Secretary to sign for the Department of Transportation. The conditions and provisions herein cannot be changed except over the signature of the said Contract Officer.

The quantities shown in the itemized proposal for the project are considered to be approximate only and are given as the basis for comparison of bids. The Department of Transportation may increase or decrease the quantity of any item or portion of the work as may be deemed necessary or expedient.

An increase or decrease in the quantity of any item will not be regarded as sufficient ground for an increase or decrease in the unit prices, nor in the time allowed for the completion of the work, except as provided for the contract.

Accompanying this bid is a bid bond secured by a corporate surety, or certified check payable to the order of the Department of Transportation, for five percent of the total bid price, which deposit is to be forfeited as liquidated damages in case this bid is accepted and the Bidder shall fail to provide the required payment and performance bonds with the Department of Transportation, under the condition of this proposal, within 14 calendar days after the written notice of award is received by him, as provided in the Standard Specifications; otherwise said deposit will be returned to the Bidder.



CONTRACT: C201320
HAYWOOD COUNTY

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PROPOSAL FORM, ITEM SHEETS, ETC.

Item Sheets
Signature Sheet 7 (Bid Acceptance by Department)

PROJECT SPECIAL PROVISIONS

General 7-1-95

CONTRACT TIME AND LIQUIDATED DAMAGES: 8-15-00$_R$

The date of availability for this contract is November 1, 2004, except that work in jurisdictional waters and wetlands shall not begin until a meeting between the DOT, Regulatory Agencies, and the Contractor is held as stipulated in the permits contained elsewhere in this proposal. This delay in availability has been considered in determining the contract time for this project.

The completion date for this contract is June 1, 2005.

When observation periods are required by the special provisions, they are not a part of the work to be completed by the completion date and/or intermediate contract times stated in the contract. Should an observation period extend beyond the final completion date, the acceptable completion of the observation period shall be a part of the work covered by the performance and payment bonds.

The liquidated damages for this contract are One Thousand Dollars ($1,000.00) per calendar day. These liquidated damages will not be cumulative with any liquidated damages which may become chargeable under Intermediate Contract Time Number 1.

SP1G07

INTERMEDIATE CONTRACT TIME NUMBER 1 AND LIQUIDATED DAMAGES A+B BIDDING: 10-12-04

The Contractor shall complete the proposed retaining walls at Station 17+00 to Station 22+25 and Station 33+00 to 35+00, pavement, guardrail, temporary pavement markings, signs, and shall place and maintain traffic in its permanent pattern on I-40 East Bound Lane.

The date of availability for this intermediate contract time is November 1, 2004.

The intermediate contract time for this work shall be determined by the Bidder and entered onto the itemized proposal form by the Bidder in the place indicated. In no case shall the Bidder bid more than 134 (March 14, 2005) consecutive calendar days.

The daily cost for this intermediate contract time is Seven Thousand Dollars ($7,000.00) per calendar day.

The liquidated damages for this intermediate contract time are Seven Thousand Dollars ($7,000.00) per calendar day.

The 2002 *Standard Specifications for Roads and Structures* shall be revised for Intermediate Contract Time Number 1 as follows:

Page 1-5, Article 101-46. Delete the article and substitute the following:

101-46 INTERMEDIATE COMPLETION DATE.

That date as determined by adding the number of calendar days bid by the Contractor to the date of availability, or as revised by authorized extensions, by which date it is required that the intermediate work set forth in the contract will be satisfactorily completed. The date of availability will be counted as the first contract calendar day.

Page 1-5, Article 101-48. Delete the article and substitute the following:

101-48 INTERMEDIATE CONTRACT TIME (DAYS)

The number of days bid by the Contractor including authorized extensions to the intermediate completion date.

Page 1-13, Article 102-8 (4) Add the following paragraph after the second subparagraph:

The intermediate contract time bid shall be entered in the proposal form. The number of calendar days shall be entered in figures in the "Unit Cost" column. The amount bid for the contract time will be determined by multiplying the number of calendar days bid by the daily cost per calendar day indicated in the proposal form and shall be the amount appearing in figures in the "Amount" column of the proposal form.

Page 1-13, Article 102-8 Delete paragraph 5 and substitute the following:

5. The total amount bid shall be determined by adding the amounts bid for each item and for the contract time.

Page 1-15, Article 102-11. Delete the first three sentences of the first paragraph and substitute the following:

The bid shall be accompanied by a corporate bid bond or a bid deposit of a certified or cashiers check in the amount of at least 5% of the total amount bid for the contract excluding the amount bid for the contract time. No bid will be considered or accepted unless accompanied by one of the foregoing securities. The bid bond shall be executed by a Corporate Surety licensed to do business in North Carolina and the certified check or cashiers check shall be drawn on a bank or trust company insured by the Federal Deposit Insurance Corporation and made payable to the Department of Transportation in an amount of at least 5% of the total amount bid excluding the amount bid for the contract time.

Page 1-17, Article 102-15. Add the following paragraph after the first paragraph:

Any bid submitted in which the Bidder fails to bid the intermediate contract time or bids more intermediate contract time than specified in these provisions shall be considered irregular and may be rejected.

Page 1-18, Article 103-1. Delete the first paragraph and substitute the following:

After the bids are opened and read, they will be compared on the basis of the summation of the products of the quantities shown in the bid schedule and the unit bid prices and the product of the cost per calendar day shown in the bid schedule and the contract time. The results of such comparisons will be immediately available to the public.

Page 1-20, Subarticle 103-4(A). Delete this subarticle in its entirety and substitute the following:

The award of the contract, if it be awarded will be made to the lowest responsible Bidder. In determining the total amount bid by a Bidder, the Department will consider the dollar amount bid to perform all the work under the terms of the contract and the total number of calendar days to complete the work. The lowest bid will be determined by the Department as the lowest combination of (A) and (B) according to the following formula:

Total Amount Bid = A + (B x DC) where

A is the total dollar amount for all work to be performed under
The contract,
B is the time in calendar day's bid not to exceed the maximum number
of calendar days specified in the proposal, and
DC is the daily cost as stipulated in the proposal.

The preceding formula shall be used only to determine the lowest and best bid and shall not be used to determine the final payment to the Contractor upon completion of the work.

In the event that two or more Bidders submit the lowest total bid, the award, if made, will be made to the Bidder bidding the lowest number of calendar days to complete the work.

The lowest responsible Bidder will be notified that his bid has been accepted and that he has been awarded the contract.

Award of a contract involving any unbalanced bid price(s) may be made in accordance with the provisions of Article 102-15.

Page 1-61, Subarticle 108-10(B), Paragraph 1. Delete this paragraph in its entirety and substitute the following:

1. If the total dollar value of the final quantities adjusted as provided herein less the dollar value of quantities represented by supplemental agreements which previously extended the completion date, or intermediate completion date, or intermediate completion time, exceeds the dollar value of the total amount bid, excluding the amount bid for contract time or intermediate contract time, the completion date, intermediate completion date or intermediate completion time will be extended by the number of calendar days or hours obtained by multiplying the contract time (days), intermediate contract time (days) or intermediate contract time (hours) as bid or set forth in the special provisions by that percentage that such reduced final dollar value exceeds the total amount bid, excluding the

amount bid for contract time or intermediate contract time. The total dollar value of the final quantities for pro-rata computations shall be adjusted by excluding the following:

a. Unit bid price changes caused by price adjustments to asphalt cement.

b. Fuel adjustments.

c. Unit price reductions under the provisions of Article 105-3.

d. Payment for trainees.

e. Unit price changes due to pay factors established by the Specifications.

Page 1-63, Subarticle 108-10(B). Delete the first full paragraph and substitute the following:

The Contractor's plea that the maximum allowable contract time (days), intermediate contract time (days), or intermediate contract time (hours) as specified in the contract was insufficient will not be considered grounds as a valid extension in the completion date, intermediate completion date or intermediate completion time.

Page 1-63, Article 108-11. Insert "as bid or" after the word "times" in the third line of the second paragraph.

Page 8-1, Article 800-2. Insert "excluding the amount bid for contract time or intermediate contract time" following the phrase "percent of the total amount bid" throughout the article.

INTERMEDIATE CONTRACT TIME NUMBER 2 AND LIQUIDATED DAMAGES: **09-16-03**

The Contractor shall complete the required work of installing, maintaining, and removing the traffic control devices for lane closures and restoring traffic to the existing traffic pattern. The Contractor shall not close or narrow a lane of traffic on **I-40 East Bound Lane** during the following time restrictions:

DAY AND TIME RESTRICTIONS
Friday through Sunday 12:00 p.m. (noon) TO 12:00 a.m. (midnight)

In addition, the Contractor shall not close or narrow a lane of traffic on **I-40 East Bound Lane**, detain and/or alter the traffic flow on or during holidays, holiday weekends, special events, or any other time when traffic is unusually heavy, including the following schedules:

HOLIDAY AND HOLIDAY WEEKEND LANE CLOSURE RESTRICTIONS:

1. For **any event** that creates unusually high traffic volumes, as directed by the Engineer.

2. For **New Year's Day**, between the hours of 12:00 p.m. December 31st and 12:00 a.m. January 2nd. If New Year's Day is on Saturday or Sunday, then until 12:00 a.m. the following Tuesday.

3. For **Easter**, between the hours of 12:00 p.m. Thursday and 12:00 a.m. Monday.

4. For **Memorial Day**, between the hours of 12:00 p.m. Friday and 12:00 a.m. Tuesday.

5. For **Independence Day**, between the hours of 12:00 p.m. the day before Independence Day and 12:00 a.m. the day after Independence Day.

   If Independence Day is on a Saturday or Sunday, then between the hours of 12:00 p.m. the Thursday before Independence Day and 12:00 a.m. the Tuesday after Independence Day.

6. For **Labor Day**, between the hours of 12:00 p.m. Friday and 12:00 a.m. Tuesday.

Holidays and holiday weekends shall include New Years, Easter, Memorial Day, Independence Day and Labor Day. The Contractor shall schedule his work so that lane closures are not required during these periods, unless otherwise directed by the Engineer.

The time of availability for this intermediate contract work shall be the time the Contractor begins to install all traffic control devices for lane closures according to the time restrictions listed above.

The intermediate completion time for this intermediate contract work shall be the time the Contractor is required to complete the removal of all traffic control devices for lane closures according to the time restrictions stated above and place traffic in the existing traffic pattern.

The liquidated damages are **Two Thousand Dollars ($2,000.00)** per hour time period.

RG07

RETAINING WALL SYSTEM 10-14-04

DESCRIPTION

This work shall consist of a two step process:

1. **Step one** shall consist of providing a technical proposal, schedule, and cost proposal for constructing a retaining wall system or an alternate retention system, and a concept for a toe scour protection system by selected geotechnical subcontractors.

   If the geotechnical subcontractor submits a technical proposal of an alternate retention system, it shall be in accordance with the requirements shown in the Geotechnical Engineering Scope of Work. He shall submit the items, quantities and specifications to accompany the alternate retention system and shall submit a bid on Alternate Retention System @ slide 1 and/or Alternate Retention System @ slide 2.

   The time of the scheduled oral presentations on October 19, 2004 in the Geotechnical Conference Room, Century Center, Building B will be:

Time	Subcontractor
9:00 – 10:00 a.m.	Brayman Construction Company
10:30 – 11:30 a.m.	Hayward Baker
12:00 – 1:00 p.m.	Richard Goettle, Inc.
2:00 – 3:00 p.m.	Schnabel Foundation Company

The Department will choose one geotechnical subcontractor to work on this project.

2. **Step two** shall consist of submitting a bid on the entire project, after review of the successful geotechnical subcontractor's technical proposal, schedule, and cost proposal by the selected prime contractors. The successful prime contractor subsequently shall enter into a subcontract with the successful geotechnical subcontractor chosen by the Department.

3. **Selected prime contractors and selected geotechnical subcontractors**
The selected prime contractors and selected geotechnical subcontractors invited to bid on this project are as follows:

Selected Prime Contractors	Selected Subcontractors
Blalock and Sons	Brayman Construction Company
Phillips and Jordan	Hayward Baker
Taylor and Murphy	Richard Goettle, Inc.
Wright Brothers	Schnabel Foundation Company

GEOTECHNICAL SUBCONTRACTOR SUBMITTALS:

1. **Bidding Requirements for geotechnical subcontractors**

The proposed subcontractor shall submit a fully executed bid bond; the bid bond shall remain in effect until the Department has executed a contract with the prime contractor. The subcontractors shall submit a fully executed non-collusion affidavit and debarment certification with their cost proposal.

The geotechnical subcontractor shall bid on the following items only:

Pay Item	Pay Unit
Permanent Anchor Tieback @Slide 1	Square Feet
Grout for Tieback Anchors for Slide 1	Cubic Yard
OR	
Alternate Retention System @ Slide 1	Lump Sum
AND	
Permanent Anchor Tieback @ Slide 2	Square Feet
Class VI Select Material @ Slide 2	Ton
Grout for Tieback Anchors for Slide 2	Cubic Yard
OR	
Alternate Retention System @ Slide 2	Lump Sum

2. **Submittal and Presentation of Technical Proposals and Cost Proposals**
The Department will receive the technical proposal and cost proposal at the oral interviews on October 19, 2004 beginning at 9:00 a.m. The cost proposal will be opened within 24 hours of the last presentation. The Department will choose and notify the successful geotechnical subcontractor based on criteria shown elsewhere in this provision on October 20, 2004.

3. **Evaluations**

The geotechnical subcontractor shall submit a technical proposal no later than October 19, 2004 at the scheduled oral presentation. The purpose of the technical proposal is to document the geotechnical subcontractor's understanding of the retaining wall system, selection of appropriate design criteria, and approach for completing all design and construction activities for the proposed retaining wall system. The geotechnical subcontractor's technical proposal shall be developed using narratives, tables, charts, plots, drawings and sketches as appropriate.

The Technical Review Committee will consider the understanding of the project, the anticipated problems and the solutions to those problems.

The selection of the geotechnical subcontractor and the design does not in any way imply that the Department accepts or approves the details of the technical proposal submitted by the geotechnical subcontractor.

Decisions based on cost alone will not establish the design standards for the project. The proposal will be evaluated in each of the following areas:

	EVALUATION FACTOR	POINTS
1.	Safety Plan	30
2.	Schedule and Milestones	25
3.	Long term Maintenance	20
4.	Innovation	10
5.	Environmental Stewardship	10
6.	Oral Interview	5

A. Technical Proposal Evaluation Criteria

1. Safety Plan– 30 points
   - Describe the safety aspects of the geotechnical subcontractor's design concepts and construction phasing.
   - Describe how to insure safety of the traveling public
   - Discuss the geotechnical subcontractor's overall approach to safety.
   - Safety Insurance Rating and Workman's Compensation

2. Schedule and Milestones - 25 points

   Provide a schedule for the project including both design and construction of the retaining wall system. The schedule shall show the sequence and continuity of operations, as well as the date of delivery of the retaining wall system.

   The schedule shall also include the geotechnical subcontractor's final completion date. This date shall be clearly indicated on the Project Schedule and labeled *Final Completion Date for Retaining Wall System.*

3. Long Term Maintenance – 20 points

   Identify and discuss all aspects of the durability of the proposed retaining wall system and its components

4. Innovation – 10 points

   Identify any aspects of the design or construction elements that the geotechnical subcontractor considers innovative. Include a description of alternatives that were considered whether implemented or not.

5. Environmental Stewardship – 10 points

   Describe the geotechnical subcontractor's approach to addressing environmental concerns within the project boundaries such as the Normal High Water Line as shown on the plans.

   Identify efforts to minimize impacts in the Pigeon River and other environmentally sensitive areas. Describe any temporary impacts and associated minimization approaches.

6. Oral Interview – 5 points

   Content

   The geotechnical subcontractor shall present a brief introduction of the geotechnical subcontractor's team and design/construction approach.

   Introductory comments shall be held to no more than 15 minutes.

   The Department will use this interview to ask specific questions about the geotechnical subcontractor's background, philosophies, and approach to the project.

   Presentation, questions, and answers shall not exceed 60 minutes. No more than 8 people from the geotechnical subcontractor's team may attend.

   Design Features
   Show plan view and cross-sections of the design concepts with key elements noted.

Show typical sections for the proposed systems.

Identify the appropriate design criteria for each feature if not provided.

Identify any deviations, including proposed design exceptions, from the established design criteria that will be utilized. Explain why the deviation is necessary.

Identify any special aesthetics considerations that will be part of the design.

The Department will use the information presented in the oral interview to assist in the evaluation of the technical proposal.

B. Selection Procedure

There will be a Technical Review Committee (TRC) composed of Project Managers, and three or more senior personnel from involved engineering groups that will evaluate the geotechnical subcontractor's technical proposal on the basis of the criteria provided in the geotechnical subcontractor's package.

The selection of a geotechnical subcontractor will involve both technical quality and price. The technical proposals will be presented to the TRC for evaluation. The TRC will determine whether the proposals are responsive based on the rating criteria herein. The TRC will submit an overall technical proposal score for each geotechnical subcontractor to the Contract Officer. A maximum quality credit percentage will be assigned for each project, as determined by the TRC.

Quality Credit Evaluation Factors for Technical Proposals

Safety Plan	30
Schedule and Milestones	25
Long term Maintenance	20
Innovation	10
Environmental Stewardship	10
Oral Interview	5
Maximum Score	**100**

The Contract Officer will use a table based on the maximum quality credit percentage to assign a Quality Credit Percentage to each proposal based on the proposal's overall technical score. The maximum percentage for this project will be 60%.

Quality Credit Percentage for Technical Proposals

Technical Score	Quality Credit (%)	Technical Score	Quality Credit (%)
100	60.00	84	28.00
99	58.00	83	26.00
98	56.00	82	24.00
97	54.00	81	22.00
96	52.00	80	20.00
95	50.00	79	18.00
94	48.00	78	16.00
93	46.00	77	14.00
92	44.00	76	12.00
91	42.00	75	10.00
90	40.00	74	8.00
89	38.00	73	6.00
88	36.00	72	4.00
87	34.00	71	2.00
86	32.00	70	0.00
85	30.00		

If any of the technical proposals were considered non-responsive, the Contract Officer will notify those geotechnical subcontractors of that fact. The Contract Officer shall publicly open the sealed price proposals and multiply each geotechnical subcontractor's price proposal by the Quality Credit Percentage earned by the geotechnical subcontractor's technical proposal to obtain the Quality Value of each geotechnical subcontractor's technical proposal. The Quality Value will then be subtracted from each geotechnical subcontractor's price proposal to obtain an Adjusted Price based upon Price and Quality combined. The geotechnical subcontractor having the lowest adjusted price be selected for use on this project (Contract C201320). The successful geotechnical subcontractor's name, technical proposal and cost proposal will be given to the 4 (invited to bid) prime contractors for their information prior to submittal of their bid.

The following table shows an example of the calculations involved in this process.

As Example of Calculating Quality Adjusted Price Ranking

Proposal	Technical Score	Quality Credit (%)	Price Proposal ($)	Quality Value ($)	Adjusted Price ($)
A	93	46.00	3,000,000	1,380,000	1,620,000
B	90	40.00	2,900,000	1,160,000	1,740,000
C *	95	50.00	2,800,000	1,400,000	1,400,000
D	80	20.00	2,700,000	540,000	2,160,000
E	70	0.00	2,600,000	0	2,600,000
* Successful geotechnical subcontractor – Contract Cost $2,800,000					

REVISION TO PROPOSAL

The four prime contractors will be given the successful subcontractor's name, technical proposal, schedule and cost proposal in the form of a revision to this proposal.

PRIME CONTRACTORS' ADDITIONAL BIDDING REQUIREMENTS

1. For this contract, the Contractor shall submit a bid bond and fully executed payment and performance bonds with his bid.

2. The prime contractor shall submit his bid, by completing all entries of the bid item sheet.

3. The requirement contained in Section 108-6 for performing at least 35% of this project with the Contractor's own organization is hereby waived for this project.

4. Temperature requirements for paving and seasonal limitations will be waived when directed by the Engineer.

5. The preconstruction conference will be held on October 27, 2004 at the Haywood Maintenance Center at 10:00 a.m.

STIPEND

A stipulated fee of $3000 may be awarded to each (invited-to-bid) geotechnical subcontractor who provides a responsive, but unsuccessful, proposal. If a contract award is not made, all responsive (invited-to-bid) geotechnical subcontractors may receive the stipulated fee. The stipulated fee shall be paid to eligible (invited-to-bid) geotechnical subcontractors within ninety days after the award of the contract or the decision not to award.

Once award is made, unsuccessful (invited-to-bid) geotechnical subcontractors will be notified of the opportunity to apply for the stipulated fee.

If the (invited-to-bid) geotechnical subcontractor accepts the stipulated fee, the Department reserves the right to use any ideas or information contained in the proposals in connection with any contract awarded for the project, or in connection with any subsequent procurement, with no obligation to pay additional compensation to the unsuccessful (invited-to-bid) geotechnical subcontractor.

Unsuccessful (invited-to-bid) geotechnical subcontractors may elect to refuse payment of the stipulated fee and retain any rights to its proposal and the ideas and information contained therein.

STEP 2 PROPOSAL: NOTICE TO PRIME CONTRACTORS **10-21-04**

The geotechnical subcontractor selected by the Department to be used on this project will be:

Schnabel Foundation Company
1654 Lower Roswell Road
Marietta, GA 30068
(770) 971-6455
Contact person: Kevin W. Cargill, P.E., Vice President

The geotechnical subcontractor's name, technical proposal and schedule was sent to the bidders on October 20, 2004 by Federal Express. The cost proposal is transmitted with this Step 2 proposal.

REMOVE AND STOCKPILE EXISTING PORTABLE CONCRETE BARRIER **10-14-04**

Description

The Contractor shall carefully remove existing portable concrete barrier as indicated in the Traffic Control phasing and neatly stockpile it at the Cotton Patch – Mile Marker 6.

Method of Measurement

The quantity of remove and stockpile existing portable concrete barrier to be paid for will be the actual number of linear feet of portable concrete barrier which has been satisfactorily removed and stockpiled. Measurement will be made along the top of the barrier. Measurement will be made prior to removing the portable concrete barrier.

Basis of Payment

The quantity of remove and stockpile existing portable concrete barrier measured as provided above will be paid for at the contract unit price per linear foot for "Remove and Stockpile Portable Concrete Barrier". Such price and payment will be full compensation for removing, stockpiling and all other incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Remove and Stockpile Portable Concrete Barrier	Linear Foot

TRAFFIC CONTROL PHASING **10-14-04**

Complete Step 1 according to Intermediate Contract Time #1. See Intermediate Contract Time #1 for times and liquidated damages.

STEP 1:
Complete all necessary work in the eastbound direction of I-40 including but not limited to or as directed by the Engineer:

- Retaining walls
- Milling
- Paving
- Installing Barrier Rail or Guardrail
- Temporary paint pavement markings

STEP 2:
Shift eastbound traffic to eastbound I-40 outside lane using Roadway Standard 1101.02 Sheet 3 of 7 and 4, 6 and 7 if needed. Traffic will then be in a one lane-one way pattern in each direction. Simultaneously close crossovers to traffic using drums and barricades. Remove any conflicting markings applied during crossover usage by means approved by the Engineer and if necessary, remove crossovers as approved by the Engineer.

Use Roadway Standard 1101.02 Sheet 3 of 7 and 4, 6 and 7 if needed, and remove portable concrete barrier in the westbound lane. Stockpile the Portable Concrete Barrier at storage area Mile Marker 6. Simultaneously replace Portable Concrete Barrier with drums to keep inside westbound and eastbound lane closed until the damaged median barrier is repaired in STEP 3.

STEP 3:
Repair any damaged median barrier while traffic is in a one lane-one way pattern in each direction. Once the median barrier is repaired, I-40 eastbound and westbound traffic may be opened to existing multilane pattern and temporary lane closure traffic control devices removed.

STEP 4:
Use Roadway Standard 1101.02 Sheet 3 of 7 and 4, 6 and 7 if needed, and close outside lane of eastbound I-40 and install rock buttresses and remove access roads.

STEP 5:
Use Roadway Standard Drawings 1101.02 Sheets 3, 4, 6 and 7 of 7 and apply final pavement markings and markers for westbound and eastbound I-40.

STEP 6:
Once construction is complete remove all traffic control devices and place traffic in existing pattern.

SAFETY INDEX RATING: **6-18-02**

Revise the 2002 Standard Specifications as follows:

Page 1-10, Article 102-2

Before the last paragraph on this page, add the following paragraph:

"All subcontractors performing work for the Department shall have received a passing grade on the Safety Index Rating form, in accordance with Article 102-2, prior to beginning work. Subcontractors can request the Safety Index Rating form from the State Contractual Services Engineer."

SP1G14

NO MAJOR CONTRACT ITEMS: **2-19-02**

None of the items included in this contract will be major items. (See Articles 101-54 and 104-5 of the *Standard Specifications*).

SP1G31

NO SPECIALTY ITEMS: **7-1-95**

None of the items included in this contract will be specialty items (See Article 108-6 of the Standard Specifications).

SP1G34

SPECIAL REQUIREMENTS FOR WORK IN NATIONAL FOREST: 7-1-95

In addition to other requirements in this proposal form with respect to clearing, erosion control, protection of environment, etc., comply with the following requirements:

1. Comply with the portions of these Special Requirements, entitled "Fire Plan", Clearing Plan" and "Landscape and Erosion Control Plan". Note the fact that merchantable timber within Forest Service Property will become the property of the Contractor.

2. Comply with the following recommendations of the State Fish and Game Department and Forest Service for wildlife and fish management:

   a. Take all necessary precautions to avoid damage to fish habitat and exercise every reasonable precaution to prevent muddying or silting live streams.

   b. Do not deposit material removed from the roadway or channel changes in live streams or into the streams or stream channel where it would be washed away by high stream flows.

   c. Do not haul materials, including logs, brush, and debris, by fording live streams. Instead, provide temporary bridges or other structures for this purpose.

3. Dispose of waste material resulting from slides during construction and surplus material at locations approved by the Forest Supervisor. Submit a plan showing the proposed method of disposal at the time approval is requested.

4. Treat sections of existing road to be abandoned as a result of the proposed new construction, as designated by the Forest Supervisor, to restore them to their natural state. The necessary treatment will be determined during a joint review between the Forest Service and the State and may include ripping of roadbed, removal of drainage structure, and opening drainage channels. Plans and specifications as mutually deemed appropriate to accomplish the objective will become a part of this stipulation.

5. Permanently monument the right of way prior to completion of construction in accordance with State requirements for such right of way, but in any event the minimum requirements will be to place permanent monuments at the intersection of right of way with all property lines, section lines, and at intervals of not more than 1,000 feet along the right of way limits.

6. Re-establish or restore public land monuments disturbed or destroyed by construction, reconstruction, or maintenance according to instructions of the Bureau of Land Management, Department of the Interior. Do not damage, destroy, or obliterate other land monuments and property corners or witness markers without the prior permission of the Regional Forester. Relocate or re-establish these land monuments, property corners, and witness markers in accordance with standards satisfactory to the Regional Forester.

Fire Protection Plan:

During the period of construction, perform both independently and in cooperation with the Forest Service everything that is reasonable and practical to prevent and suppress forest fires on the easement area and in its immediate vicinity. Include provisions in all subcontracts for the construction of the road requiring subcontractors and their respective employees to do likewise. The contractors and subcontractors, mustl conform to, but not be limited to, the following Fire Plan:

1. Take immediate independent or cooperative action to control and extinguish any fire, regardless of cause, within the easement area and its vicinity.

2. Maintain at readily available sites one or more boxes of fire fighting tools to be furnished by the Forest Service for forest fire fighting purposes only.

3. Perform debris burning only in the center of the right of way, and only after a strip 20 feet (6.1 m) wide around each pile is cleared to mineral soil.

4. Keep fires compact by chunking in the larger material as it burns. If piles are too close together or burn hot, light every second or third pile; allow these to cool down before firing the others. On slopes start burning at the top and work down. Confine fires to piles at all times.

5. Do not leave fires unattended.

6. Discontinue burning upon notification by the District Forest Ranger or his representative that fire danger is such that there is abnormal risk.

7. Whenever a fire escapes, notify the District Ranger immediately even if the fire is suppressed without Forest Service assistance.

8. The contractor or subcontractor responsible will bear the costs, including Forest Service direct costs and value of resources damages, incurred by the Forest Service in controlling and extinguishing any fire on or threatening National Forest lands which they or their employees caused with or without negligence in connection with construction operations.

9. Contact the District Ranger 24 hours in advance of burning.

Clearing Plan

Conform to the following clearing plan:

1. Dispose of unmerchantable materials including tops, branches, etc., by piling and burning as directed by the Forest Service or used in brush barriers. Alternate methods of disposal,

including any of the following methods or combinations of methods (lop and scatter, chip, remove, pile only), must be approved in advance by the Forest Service.

2. The maximum clearing and grubbing limits are to be as shown on the plans except that cutting of hazard trees outside these limits may be done with approval. Confine construction machinery within the clearing limits.

Landscape and Erosion Control Plan

The erosion control plan will be designed and implemented to prevent visible sediment, as defined by NC-DEHNR regulations, from reaching any defined stream channel.

Conform to, but not be limited to, the following Landscape and Erosion Control Plan.

1. Prevent visible sediment from entering any stream channel. If an erosion control practice must be sited in a channel, it must stop further down-channel transport of visible sediment.

2. Bear responsibility for the prevention and control of soil erosion and gullying on the right of way and lands adjacent thereto resulting from the construction of maintenance of the road. Revegetate with grass (not Love Grass) or herbaceous plants all ground where the soil has been exposed. Accomplish revegetation within 20 working days following final grading.

3. Round the ends of cut sections and the tops of back slopes.

4. Vegetate all front and back slopes by liming, fertilizing, mulching and seeding; including any waste area. Mulch critical areas if they are to be exposed greater than 5 working days of probable inclement weather during seasons when seeding is impracticable. Critical areas include all bare soils within 100 feet (30.5 m) [slope distance] of perennial and intermittent streams. Mulch these as soon as practical and after final seeding.

5. Maintain all erosion control practices in a timely manner to prevent visible sediment from entering any stream channel, until such time that the final revegetation stabilizes the site and prevents erosion and off-site movement of sediment.

REMOVE AND STOCKPILE EXISTING PORTABLE CONCRETE BARRIER **10-14-04**

Description

The Contractor shall carefully remove existing portable concrete barrier as indicated in the Traffic Control phasing and neatly stockpile it at the Cotton Patch – Mile Marker 6.

Method of Measurement

The quantity of remove and stockpile existing portable concrete barrier to be paid for will be the actual number of linear feet of portable concrete barrier which has been satisfactorily removed and stockpiled. Measurement will be made along the top of the barrier. Measurement will be made prior to removing the portable concrete barrier.

Basis of Payment

The quantity of remove and stockpile existing portable concrete barrier measured as provided above will be paid for at the contract unit price per linear foot for "Remove and Stockpile Portable Concrete Barrier". Such price and payment will be full compensation for removing, stockpiling and all other incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Remove and Stockpile Portable Concrete Barrier	Linear Foot

TRAFFIC CONTROL PHASING **10-14-04**

Complete Step 1 according to Intermediate Contract Time #1. See Intermediate Contract Time #1 for times and liquidated damages.

STEP 1:
Complete all necessary work in the eastbound direction of I-40 including but not limited to or as directed by the Engineer:

- Retaining walls
- Milling
- Paving
- Installing Barrier Rail or Guardrail
- Temporary paint pavement markings

STEP 2:
Shift eastbound traffic to eastbound I-40 outside lane using Roadway Standard 1101.02 Sheet 3 of 7 and 4, 6 and 7 if needed. Traffic will then be in a one lane-one way pattern in each direction. Simultaneously close crossovers to traffic using drums and barricades. Remove any conflicting markings applied during crossover usage by means approved by the Engineer and if necessary, remove crossovers as approved by the Engineer.

Use Roadway Standard 1101.02 Sheet 3 of 7 and 4, 6 and 7 if needed, and remove portable concrete barrier in the westbound lane. Stockpile the Portable Concrete Barrier at storage area Mile Marker 6. Simultaneously replace Portable Concrete Barrier with drums to keep inside westbound and eastbound lane closed until the damaged median barrier is repaired in STEP 3.

STEP 3:
Repair any damaged median barrier while traffic is in a one lane-one way pattern in each direction. Once the median barrier is repaired, I-40 eastbound and westbound traffic may be opened to existing multilane pattern and temporary lane closure traffic control devices removed.

STEP 4:
Use Roadway Standard 1101.02 Sheet 3 of 7 and 4, 6 and 7 if needed, and close outside lane of eastbound I-40 and install rock buttresses and remove access roads.

STEP 5:
Use Roadway Standard Drawings 1101.02 Sheets 3, 4, 6 and 7 of 7 and apply final pavement markings and markers for westbound and eastbound I-40.

STEP 6:
Once construction is complete remove all traffic control devices and place traffic in existing pattern.

SAFETY INDEX RATING: **6-18-02**

Revise the 2002 Standard Specifications as follows:

Page 1-10, Article 102-2

Before the last paragraph on this page, add the following paragraph:

"All subcontractors performing work for the Department shall have received a passing grade on the Safety Index Rating form, in accordance with Article 102-2, prior to beginning work. Subcontractors can request the Safety Index Rating form from the State Contractual Services Engineer."

SP1G14

NO MAJOR CONTRACT ITEMS: **2-19-02**

None of the items included in this contract will be major items. (See Articles 101-54 and 104-5 of the *Standard Specifications*).

SP1G31

NO SPECIALTY ITEMS: **7-1-95**

None of the items included in this contract will be specialty items (See Article 108-6 of the Standard Specifications).

SP1G34

EXECUTION OF SIGNATURE SHEETS AND DEBARMENT CERTIFICATION: **9-18-01**

The Bidder's attention is directed to the various sheets in the proposal form which are to be signed by the Bidder. A list of these sheets is shown below. The signature sheets are located behind the item sheets in the proposal form. The bid bond is inserted in the proposal form.

1. Applicable Signature Sheets: 1, 2, 3, 4, 5, or 6 (Bid)

2. Bid Bond (Proposal Insert)

The Bidder shall certify his and to the best of his knowledge all subcontractors, material suppliers and vendors utilized herein current status concerning suspension, debarment, voluntary exclusion, or determination of ineligibility by any federal agency, in accordance with the "Debarment Certification" located behind the signature sheets in the proposal forms. Execution of the bid signature sheets in conjunction with any applicable statements concerning exceptions, when such statements have been made on the "Debarment Certification", constitutes the Bidders certification of "status" under penalty of perjury under the laws of the United States.

D1G17

SUBMISSION OF BIDS: **6-16-92**

The Bidder's attention is directed that each Bidder's Bid shall comply with the following requirements in order for that bid to be responsive and considered for award.

1. The Bidder shall be prequalified with the Department prior to submitting a bid.

2. The Bidder shall deliver the bid to the place indicated in the Specifications and prior to the time indicated in the proposal form.

3. The bid documents shall be signed by an authorized employee of the Bidder.

4. The bid shall be accompanied by bid surety in the form of a bid bond or bid deposit.

5. If Disadvantaged Business Enterprises (DBE) goals are established for this contract, the bidder shall complete the form Listing of DBE Subcontractors contained elsewhere in this proposal in accordance with the Project Special Provision entitled Disadvantaged Business Enterprises.

In addition to the above requirements, failure to comply with any of the requirements of Articles 102-8, 102-9, 102-10 or 102-11 of the specifications may result in a bid being rejected.

D1G18

DISADVANTAGED BUSINESS ENTERPRISE **01-18-00$_R$**

POLICY

It is the policy of the North Carolina Department of Transportation that Disadvantaged Business Enterprises shall have the opportunity to participate in the performance of contracts financed in whole or in part by Federal Funds in order to create a level playing field.

The Contractor is also encouraged to give every opportunity to allow DBE participation in Supplemental Agreements.

OBLIGATION

The contractor, subcontractor, and sub-recipient shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry our applicable requirements of 49 CFR 26 in the award and administration of federally assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy, as the Department deems necessary.

GOALS

Even though specific DBE goals have not been established for this project the Contractor shall report the utilization of DBE's during the construction of the project as follows:

COUNTING DBE PARTICIPATION:

(1) If a firm is determined to be an eligible DBE firm and certified by the Department, the total dollar value of the participation by the DBE will be counted. The total dollar value of participation by a certified DBE will be based upon the value of work actually performed by the DBE and the actual payments to DBE firms by the contractor.

(2) When a DBE performs as a participant in a joint venture, the contractor may count a portion of the total value of participation with the DBE in the joint venture, that portion of the total dollar value being a distinct clearly defined portion of work that the DBE performs with its forces.

(3) (a) The Contractor may count only expenditures to DBEs that perform a commercially useful function in the work of a contract. A DBE is considered to perform a commercially useful function when it is responsible for execution of a distinct element of the work of a contract and carrying out its responsibilities by actually performing, managing, and supervising the work involved. To determine whether a DBE is performing a commercially useful function, the Department will evaluate the amount of work subcontracted, industry practices, whether the amount the firm is to be paid under the contract is commensurate with the work it is actually performing and the DBE credit claimed for its performance of the work, and other relevant factors.

(b) Consistent with normal industry practices, a DBE may enter into subcontracts. Work that a DBE subcontracts to another DBE firm may be counted. Work that a DBE subcontracts to a non-DBE firm does not count. If a DBE Contractor or Subcontractor subcontracts a significantly greater portion of the work of the contract than would be expected on the basis of normal industry practices, the DBE shall be presumed not to be performing a commercially useful function. The Departments decision on the rebuttal of this presumption is subject to review by the Federal Highway Administration but is not administratively appealable to USDOT.

(c) The following factors will be used to determine if a DBE trucking, firm is performing a commercially useful function.

(1) The DBE firm must be responsible for the management and supervision of entire trucking operation

(2) The DBE must itself own and operate at least one fully licensed, insured and operational truck

(3) The DBE will receive full credit for all trucks that he owns, insures, operates, and for which he employs drivers

(4) The DBE will receive full credit for all trucks leased from a certified DBE firm

(5) The DBE will only receive credit for the fees or commission for trucks leased from a non-DBE firm

(6) Others may use trucks during the term of the lease so long as the lease gives priority to the DBE for the use of the truck(s).

The DBE may present evidence to rebut this presumption to the Department for commercially useful functions.

(4) A Contractor may count toward its DBE goal 60 percent of its expenditures for materials and supplies required to complete the contract and obtained from DBE regular dealer and 100 percent of such expenditures to a DBE manufacturer.

(a) For purposes of this provision, a manufacturer is a firm that operates or maintains a factory or establishment that produces on the premises the materials or supplies obtained by the Contractor.

(b) For purposes of this provision, a regular dealer is a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials or supplies required for the performance of the contract are bought, kept in stock, and regularly sold to the public in the usual course of business. To be a regular dealer, the firm must engage in, as its principal business and in its own name, the purchase and sale of the products in question. A regular dealer in such bulk items as steel, cement, gravel, stone, and petroleum products need not keep such products in stock, if it owns or operates distribution equipment. Brokers and

packagers shall not be regarded as manufacturers or regular dealers within the meaning of this section.

(5) A contractor may count toward its DBE goal the following expenditures to DBE firms that are not manufacturers or regular dealers:

(a) The fees or commissions charged by a DBE firm for providing a bona fide service, such as professional, technical, consultant, or managerial services, or for providing bonds or insurance specifically required for the performance of a DOT-assisted contract, toward DBE goal, provided the fees or commissions are determined to be reasonable and not excessive as compared with fees and commissions customarily allowed for similar services.

(b) The fees or commissions charged for assistance in the procurement of the materials and supplies, or for transportation charges for the delivery of materials or supplies required on a job site (but not the cost of the materials and supplies themselves), toward DBE goals, provided the fees are not from a manufacturer or regular dealer and provided the fees are determined to be reasonable and not excessive as compared with fees customarily allowed for similar services.

REPORTS

All requests for subcontracts involving DBE subcontractors shall be accompanied by a certification executed by both the Prime Contractor and the DBE subcontractor attesting to the agreed upon unit prices and extensions for the affected contract items. This document shall be on the Department's Form RS-1-D, or in lieu of using the Departments Form, copies of the actual executed agreement between the Prime Contractor and the DBE subcontractor may be submitted. In any event, the Department reserves the right to require copies of actual subcontract agreements involving DBE Subcontractors.

The RS-1-D certification forms may be obtained from the Departments Resident Engineer.

These certifications shall be considered a part of the project records, and consequently will be subject to penalties under Federal Law associated with falsifications of records related to projects.

REPORTING DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION

When payments are made to Disadvantaged Business Enterprise firms, including material suppliers, contractors at all levels (prime, subcontractor, or second tier subcontractor) shall provide the Engineer with an accounting of said payments. This accounting shall be furnished the Engineer for any given month by the end of the following month. Failure to submit this information accordingly may result in (1) withholding of money due in the next partial pay estimate; or (2) removal of an approved Contractor from the prequalified bidders list or the removal of other entities from the approved subcontractors list. The accounting shall list for each payment made to a Disadvantaged Business Enterprise firm the following:

DOT Project Number
Payee Contractor Name
Receiving Contractor or Material Supplier
DBE Certification Basis, e.g., Woman Owned, Native American, African American, etc.
Amount of Payment
Date of Payment

A responsible fiscal officer of the payee contractor, subcontractor, or second tier subcontractor who can attest to the date and amounts of the payments shall certify that the accounting is correct. A copy of an acceptable report may be obtained from the Engineer.

SP1G64

RETAINAGE AND PROMPT PAYMENT: **1-01-02**

Retainage:

The Department will not deduct and hold any retainage from the Prime Contractor on this project.

The 2002 Standard Specifications shall be revised as follows:

Sub-Article 109-4(A), pages 1-69 and 1-70

Delete the second, third, fourth, and fifth paragraphs of this subarticle.

Insert the following:

"The Department will withhold an amount sufficient to cover anticipated liquidated damages, as determined by the Engineer."

Prompt Payment of Monies Due Subcontractors, Second Tier Subcontractors and Material Suppliers and Release of Retainage

Contractors at all levels; prime, subcontractor, or second tier contractor, shall within seven calendar days of receipt of monies, resulting from work performed on the project or services rendered, pay subcontractors, second tier subcontractors, or material suppliers, as appropriate. This seven-day period begins upon knowledgeable receipt by the contracting firm obligated to make a subsequent periodic or final payment. These prompt payment requirements will be met if each firm mails the payment to the next level firm by evidence of postmark within the seven-day period.

This provision for prompt payment shall be incorporated into each subcontract or second tier subcontract issued for work performed on the project or for services provided.

The Contractor may withhold up to 3% retainage if any subcontractor does not obtain a payment and performance bond for their portion of the work. If any retainage is held on subcontractors, all retainage shall be released within seven calendar days of satisfactory completion of all work. For the purpose of release of retainage, satisfactory completion is defined as completion of all

physical elements and corresponding documentation as defined in the contract, as well as agreement between the parties as to the final quantities for all work performed in the subcontract. The Department will provide internal controls to expedite the determination and processing of the final quantities for the satisfactorily completed subcontract portions of the project.

Failure of any entity to make prompt payment as defined herein may result in (1) withholding of money due to that entity in the next partial payment until such assurances are made satisfactory to this provision; or (2) removal of an approved contractor from the prequalified bidders list or the removal of other entities from the approved subcontractors list.

SP1G73

CERTIFICATION FOR FEDERAL-AID CONTRACTS: **03-21-90**

The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such subrecipients shall certify and disclose accordingly.

SP1G85

DOMESTIC STEEL AND IRON PRODUCTS: **7-1-95**

All steel and iron products which are permanently incorporated into this project shall be produced in the United States except minimal amounts of foreign steel and iron products may be

used provided the combined project cost of the bid items involved does not exceed one-tenth of one percent (0.1 percent) of the total amount bid for the entire project or $2,500.00, whichever is greater. This minimal amount of foreign produced steel and iron products permitted for use by this Special Provision is not applicable to fasteners. Domestically produced fasteners are required for this project.

All steel and iron products furnished as "domestic products" shall be melted, cast, formed, shaped, drawn, extruded, forged, fabricated, produced, or otherwise processed and manufactured in the United States. Raw materials including pig iron and processed pelletized and reduced iron ore used in manufacturing "domestic" steel products may be imported; however, all manufacturing processes to produce the products, including coatings, must occur in the United States.

Before each steel or iron product is incorporated into this project or included for partial payment on a monthly estimate, the Contractor shall furnish the Resident Engineer a notarized certification certifying that the product conforms to the above requirements of this Special Provision. The Resident Engineer will forward a copy of each certification to the Materials and Tests Unit.

Each purchase order issued by the Contractor or a subcontractor for steel and iron products to be permanently incorporated into this project shall contain in bold print a statement advising the supplier that all manufacturing processes to produce the steel or iron shall have occurred in the United States. The Contractor and all affected subcontractors shall maintain a separate file for steel products permanently incorporated into this project so that verification of the Contractor's efforts to purchase "domestic" steel and iron products can readily be verified by an authorized representative of the Department or the Federal Highway Administration.

SP1G97

U.S. DEPARTMENT OF TRANSPORTATION HOTLINE: **11-22-94**

To report bid rigging activities call:

1-800-424-9071

The U.S. Department of Transportation (DOT) operates the above toll-free "hotline" Monday through Friday, 8:00 a.m. to 5:00 p.m. eastern time. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report such activities.

The "hotline" is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

SP1G100

SUBMISSION OF RECORDS - FEDERAL-AID PROJECTS: **12-15-98**

The Contractor's attention is directed to the Standard Special Provisions entitled "Required Contract Provisions - Federal-Aid Construction Contracts" contained elsewhere in this proposal.

This project is located on the National Highway System. If the final construction cost of this project equals or exceeds **One Million Dollars**, the Contractor must submit federal form FHWA-47.

SP1G106

COMPENSATION AND RECORD KEEPING **03-16-04**

Revise the *2002 Standard Specifications* as follows:

104-8 Compensation and Record Keeping

Change Article (A), subarticle 1. with the following:

In line 3 and line 6, change $15,000.00 to $25, 000.00.

SP1G110

CONTRACTOR BORROW SOURCE 10-19-04

Revise the *2002 Standard Specifications* as follows:

Page 2-17, Article 230-4(C) Contractor Furnished Sources, add the following;

If the Contractor proposes a borrow source, the environmental assessment shall include wetland and stream delineation extending 400 feet beyond the proposed borrow source limits.

1. If wetlands or streams are present within 400 feet of the borrow source and the contractor proposes to dewater:

    a. Submit a hydrologic analysis (Skaggs Method) to determine if lateral effects will permanently impact or cause degradation to wetlands or streams. The analysis shall be performed by an environmental or hydraulics engineer with expertise in this discipline and shall consist of, but not be limited to:

        Hydric soil type
        Average profile depth to restrictive soil layer
        Average hydraulic conductivity or permeability
        Average drainable porosity or available water capacity
        Required buffer width, including safety factor

b. Attach a conservation easement specifying that the completed pit impoundment, shall not be drained, ditched, used for irrigation, or any other manner that would degrade wetlands and streams.

c. Provide copy of recorded conservation easement to Engineer prior to commencement of any work on proposed pit.

2. If wetlands or streams are not present within 400 feet, no additional documentation will be required.

During Department review of the proposed borrow area, the hydrologic analysis will be submitted to the U. S. Army Corps of Engineers for evaluation.

Obtain copy of Skaggs Method for Determining Lateral Effects of a Borrow Pit on Adjacent Wetlands from Roadside Environmental Unit web site:
http://www.doh.dot.state.nc.us/operations/dp_chief_eng/roadside/fieldops/
Copies may also be obtained from Room 558, Transportation Building, 1 S. Wilmington Street, Raleigh, NC 27601.

SP1G111

SUBSURFACE INFORMATION: **7-1-95**

Subsurface information is available on the roadway portion of this project only.

SP1G115

PLANT AND PEST QUARANTINES: **03-18-03**
(IMPORTED FIRE ANT, GYPSY MOTH, WITCHWEED, AND OTHER NOXIOUS WEEDS)

Within quarantined area:
This project may be within a county regulated for plant and/or pests. If the project or any part of the Contractor's operations is located within a quarantined area, thoroughly clean all equipment prior to moving out of the quarantined area. Comply with federal/state regulations by obtaining a certificate or limited permit for any regulated article moving from the quarantined area.

Originating in a quarantined county:
Obtain a certificate or limited permit issued by the N.C. Department of Agriculture/United States Department of Agriculture. Have the certificate or limited permit accompany the article when it arrives at the project site.

Contact:
Contact the N.C. Department of Agriculture/United States Department of Agriculture at 1-800-206-9333, 919-733-6932, or http://www.ncagr.com/plantind/ to determine those specific project sites located in the quarantined area or for any regulated article used on this project originating in a quarantined county.

Regulated Articles Include:

1. Soil, sand, gravel, compost, peat, humus, muck, and decomposed manure, separately or with other articles. This includes movement of articles listed above that may be associated with cut/waste, ditch pulling, and shoulder cutting.
2. Plants with roots including grass sod.
3. Plant crowns and roots.
4. Bulbs, corms, rhizomes, and tubers of ornamental plants.
5. Hay, straw, fodder, and plant litter of any kind.
6. Clearing and grubbing debris.
7. Used agricultural cultivating and harvesting equipment.
8. Used earth-moving equipment.
9. Any other products, articles, or means of conveyance, of any character, if determined by an inspector to present a hazard of spreading imported fire ant, gypsy moth, witchweed or other noxious weeds.

SP1G130

SAFETY VESTS: **6-19-01**

All Contractors' personnel, all subcontractors and their personnel, and any material suppliers and their personnel must wear an OSHA approved reflective vest or outer garment at all times while on the project.

SP1G139

DIRECTOR OF CONSTRUCTION IN LIEU OF CHIEF ENGINEER **03-16-04**

Revise the 2002 Standard Specifications as follows:

Wherever the term *Chief Engineer* or *Chief Engineer of Operations* occurs in the Specifications, the actions and responsibilities referred to will be performed by the Director of Construction, Division of Highways, North Carolina Department of Transportation, acting directly or through his duly authorized representative.

Revision to Definitions of Terms

Page 1-4, Article 101-35

101-35 ENGINEER

The Chief Engineer of Operations, and/or Director of Construction, Division of Highways, North Carolina, Department of Transportation, acting directly or through their duly authorized representative.

SP1G143

TWELVE MONTH GUARANTEE: **07-15-03**

A. The Contractor shall guarantee materials and workmanship against latent and patent defects arising from faulty materials, faulty workmanship or negligence for a period of twelve months following the date of final acceptance of the work for maintenance and shall replace such defective materials and workmanship without cost to the Department. The Contractor will not be responsible for damage due to faulty design, normal wear and tear, for negligence on the part of the Department, and/or for use in excess of the design.

B. Where items of equipment or material carry a manufacturer's guarantee for any period in excess of twelve months, then the manufacturer's guarantee shall apply for that particular piece of equipment or material. The Department's first remedy shall be through the manufacturer although the Contractor is responsible for invoking the warranted repair work with the manufacturer. The Contractor's responsibility shall be limited to the term of the manufacturer's guarantee. NCDOT would be afforded the same warranty as provided by the Manufacturer.

This guarantee provision shall be invoked only for major components of work in which the Contractor would be wholly responsible for under the terms of the contract. Examples would include pavement structures, bridge components, and sign structures. This provision shall not be used as a mechanism to force the Contractor to return to the project to make repairs or perform additional work that the Department would normally compensate the Contractor for. In addition, routine maintenance activities (i.e. mowing grass, debris removal, ruts in earth shoulders,) are not parts of this guarantee.

Appropriate provisions of the payment and/or performance bonds shall cover this guarantee for the project.

To ensure uniform application statewide the Division Engineer will forward details regarding the circumstances surrounding any proposed guarantee repairs to the Chief Engineer for review and approval prior to the work being performed.

SP1G145

OUTSOURCING OUTSIDE THE USA **09-21-04**

All work on consultant contracts, services contracts, and construction contracts shall be performed in the United States of America. No work shall be outsourced outside of the United States of America.

Outsourcing for the purpose of this provision is defined as the practice of subcontracting labor, work, services, staffing, or personnel to entities located outside of the United States.

The Secretary of Transportation shall approve exceptions to this provision in writing.

SP1G150

DISQUALIFICATION OF BIDDERS 11-16-04

The 2002 *Standard Specifications* are revised as follows:

Page 1-17 Article 102-16, replace No.12 with the following:

12. Failure to submit the documents required by Article 109-10 within 60 days after request by the Engineer.

Page 1-18 Article 102-16, add the following after Number 15.

16. False information submitted on any application, statement, certification, report, records and/or reproduction.

    Conviction of any employee of company, of any applicable state or federal law, may be fully imputed to the business firm with which he is or was associated or by whom he was employed or with the knowledge or approval of the business firm or thereafter ratified by it.

17. Being debarred from performing work with other city, state, and federal agencies.

18. Failure to perform guaranty work within the terms of the contract.

SP1G155

PROJECT SPECIAL PROVISIONS

Roadway 07-20-04

LS1R01

UNREINFORCED CONCRETE 10-14-04

Description

Furnish and place 9" Unreinforced Concrete behind the proposed single faced concrete barrier as shown in the plans and as directed.

Materials

Concrete shall be in accordance with the applicable requirements of Section 825 except that no reinforcement will be required.

Method of Measurement

The quantity of "Unreinforced Concrete" to be paid for will be the actual number of square yards of concrete measured along the surface of the completed and accepted work.

Basis of Payment

The quantity of "Unreinforced Concrete" measured as provided above will be paid for at the contract unit price per square yard for "Unreinforced Concrete".

Payment will be made under:

Pay Item	Pay Unit
Unreinforced Concrete	Square Yard

BORROW EXCAVATION: 2-19-02

Revise the 2002 Standard Specifications as follows:

Page 2-20, Article 230-6

After the first paragraph, insert the following paragraph:

"No direct payment will be made for the work of Evaluation of Potential Wetlands and Endangered Species as outlined above. Payment at the contract unit price for the pay item 'Borrow Excavation' or 'Grading - Lump Sum' will be considered full compensation for this work.'

SP2R37

SHOULDER AND FILL SLOPE MATERIAL(LUMP SUM GRADING) 5-21-02

General:

Perform the required shoulder and slope construction for this project in accordance with the applicable requirements of Section 226 of the Standard Specifications except as follows:

Construct the top 6 inches (150 mm) of shoulder and fill slopes with soils capable of supporting vegetation.

Provide soil with a P.I. greater than 6 and less than 25 and with a pH ranging from 5.5 to 6.8. Remove stones and other foreign material 2 inches (50 mm) or larger in diameter. All soil is subject to test and acceptance or rejection by the Engineer.

Obtain material from within the project limits or approved borrow source.

Compensation:

No direct payment will be made for this work, as the cost of this work will be considered to be a part of the work being paid for at the contract lump sum price for "Grading".

SP2R45

ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I 19.OD MODIFIED:

For the Asphalt Concrete Intermediate Course, Type 119.0D MODIFIED as specified in the typical sections, utilize a mix design which meets the requirements of TABLE 6 10-1 and Table 610-2 of the Standard Specifications, except that the percent passing the 2.36 mm sieve shall be a minimum of 40% and the aggregate blend gradation will remain above the maximum density line on larger sieves.

ASPHALT PAVEMENTS - SUPERPAVE **02-17-04**

Revise the 2002 Standard Specifications as follows:

PRIME COAT

Page 6-2, Article 600-9

Delete the first paragraph under this Article and substitute the following:

The quantity of prime coat to be paid will be the number of gallons (liters) of prime coat material that has been satisfactorily placed on the roadway. Each distributor load of prime coat material delivered and utilized on the project will be measured.

ASPHALT TACK COAT

Page 6-4, Article 605-8

Insert the following after paragraph one in this Article:

Take necessary precautions to limit the tracking and/or accumulation of tack coat material on either existing or newly constructed pavements. Excessive accumulation of tack may require corrective measures.

FIELD VERIFICATION AND JOB MIX FORMULA ADJUSTMENTS

Page 6-7, Article 609-4

Delete the first paragraph under this Article and substitute the following:

Conduct field verification of the mix at each plant within 30 calendar days prior to initial production of each mix design, when required by the Allowable Mix Adjustment Policy and when directed as deemed necessary.

Page 6-8, Article 609-4

Delete the first paragraph on this page and substitute the following:

Retain records of these calibrations and mix verification tests, including Superpave Gyratory Compactor (SGC) printouts, at the QC laboratory. In addition, furnish copies, including SGC printouts, to the Engineer for review and approval within one working day after beginning production of the mix.

Page 6-8, Article 609-4

Add the following sentence to the end of the last paragraph in this Article:

Any mix produced that is not verified may be assessed a price reduction at the Engineer's discretion in addition to any reduction in pay due to mix and/or density deficiencies.

Quality control minimum sampling and testing schedule:

Page 6-9, Subarticle 609-5(C)1

Delete the second sentence in the second paragraph of this Article and substitute the following:

Retain the QC compacted volumetric test specimens for 5 calendar days, commencing the day the specimens are prepared.

Page 6-9, Subarticle 609-5(C)2

At the bottom of this page, delete the sentence directly above the Accumulative Production Increment and substitute the following:

Sample and test the completed mixture from each mix design at the following minimum frequency during mix production:

Page 6-10, Subarticle 609-5(C)2

Revise Items B, C, D and E on this page as follows:

B. Gradation on Recovered Blended Aggregate from Mix Sample (AASHTO T 30 Modified) Grade on all sieves specified on JMF
C. Maximum Specific Gravity (AASHTO T 209 or ASTM D 2041), optional (ASTM D 6857)
D. Bulk Specific Gravity of Compacted Specimens (AASHTO T166), optional (ASTM D 6752), Average of 3 specimens at N_{des} gyrations (AASHTO T 312)
E. Air Voids (VTM) (AASHTO T 269), Average of 3 specimens at N_{des} gyrations

Page 6-11, Subarticle 609-5(C)2

At the top of this page, delete Item B.," Reclaimed Asphalt Pavement..." and substitute the following:

B. Reclaimed Asphalt Pavement (RAP) Binder Content and Gradation (AASHTO T 308 Modified or T 164 and AASHTO T 30 Modified) (sampled from stockpiles or cold feed system at beginning of production and weekly thereafter). Have RAP approved for use in accordance with Article 1012-1(G). (Split Sample Required)

Page 6-11, Subarticle 609-5(C)2

Insert the following sampling and testing at the end of this Subarticle

F. Uncompacted Void Content of Fine Aggregate, AASHTO T 304, Method A (natural sand only). Performed at Mix Design and when directed as deemed necessary. (Split Sample Required)
G. Reclaimed Asphalt Shingle Material (RAS) Binder Content and Gradation (AASHTO T 308 Modified or T 164 and AASHTO T 30 Modified) (sampled from stockpiles or cold feed system at beginning of production and weekly thereafter). Have RAS approved for use in accordance with Article 1012-1(F). (Split Sample Required)

CONTROL CHARTS

Page 6-11, Subarticle 609-5(C)3

Delete the second sentence of the first paragraph in this Subarticle and substitute the following:

Record all regularly scheduled random sample or directed sample full test series results for mix incorporated into the project on control charts the same day the test results are obtained.

Page 6-12, Subarticle 609-5(C)3

Delete item 3 in the list below the second full paragraph on this page.

CONTROL LIMITS

Page 6-12, Subarticle 609-5(C) 4

At the bottom of this page, delete the table and substitute the following:

CONTROL LIMITS

Mix Control Criteria	Target Source	Warning Limit	Moving Average Limit	Individual Limit
2.36mm Sieve	JMF	±4.0 %	±5.0 %	±8.0 %
0.075mm Sieve	JMF	±1.5 %	±2.0 %	±2.5 %
Binder Content	JMF	±0.3 %	±0.5 %	±0.7 %
VTM @ N_{des}	JMF	±1.0 %	±1.5 %	±2.0 %
VMA @ N_{des}	Min. Spec. Limit	-0.5%	-0.8%	-1.0%
$P_{0.075}$/ P_{be} Ratio	Max. Spec. Limit	0.0	N/A	+0.4%
$\%G_{mm}$ @ N_{ini}	Max. Spec. Limit	N/A	N/A	+2.0%
TSR	Min. Spec. Limit	N/A	N/A	-15.0%

FIELD COMPACTION QUALITY CONTROL

Page 6-15, Subarticle 609-5(D)1

Delete the first and second sentences in the fourth paragraph on this page and substitute the following:

Base and intermediate mix types (surface mixes not included) utilized for pavement widening of less than 4.0 feet and all mix types used in tapers, irregular areas and intersections (excluding full width travel lanes of uniform thickness), will not be subject to the sampling and testing frequency specified above provided the pavement is compacted using approved equipment and procedures. However, the Engineer may require occasional density sampling and testing to evaluate the compaction process.

Page 6-16, Subarticle 609-5(D)1

Delete item number 2 at the top of this page. Item number 3 should be re-numbered as 2 after the specified deletion.

LIMITED PRODUCTION PROCEDURE

Page 6-17, Subarticle 609-5(D) 5

Delete the first paragraph in this Subarticle and substitute the following:

Proceed on limited production when, for the same mix type, one of the following items occur:

(1) Two consecutive failing lots, excluding lots representing an individual resurfacing map or portion thereof.
(2) Three consecutive failing lots, with each lot representing an individual resurfacing map or portion thereof.
(3) Two consecutive failing nuclear control strips.

Pavement within each construction category (New and Other), as defined in Article 610-13, and pavement placed simultaneously by multiple paving crews will be evaluated independently for limited production purposes.

Delete the first sentence in the last paragraph in this Subarticle and substitute the following:

If the Contractor does not operate by the limited production procedures as specified above, the two consecutive failing density lots, three consecutive failing lots with each lot representing an individual resurfacing map or portion thereof, or two consecutive failing nuclear control strips, whichever is applicable, and all mix produced thereafter will be considered unacceptable.

DOCUMENTATION (RECORDS)

Page 6-18, Subarticle 609-5(E)

Delete the third and fourth sentence in the first full paragraph on this page and substitute the following:

Maintain all QC records, forms and equipment calibrations for a minimum of 3 years from their completion date.

Delete the second full paragraph on this page and substitute the following:

Falsification of test results, documentation of observations, records of inspection, adjustments to the process, discarding of samples and/or test results, or any other deliberate misrepresentation of the facts will result in the revocation of the applicable person's QMS certification. The Engineer will determine acceptability of the mix and/or pavement represented by the falsified results or documentation. If the mix and/or pavement in question is determined to be acceptable, the Engineer may allow the mix to remain in place at no pay for the mix, asphalt binder and other mix components. If the mix and/or pavement represented by the falsified results is determined not to be acceptable, remove and replace with mix, which complies with the Specifications. Payment will be made for the actual quantities of materials required to replace the falsified quantities, not to exceed the original amounts.

QUALITY ASSURANCE

Page 6-18, Article 609-6

In Item 5 under Plant Mix Quality Assurance, add "at a frequency equal to or greater than 5% of the QC sample frequency".

In the first sentence within the paragraph below Plant Mix Quality Assurance, delete the words "of mix".

In Item 1 under Density Quality Assurance, delete the wording at the end of the sentence "at a frequency equal to or greater than 10% of the frequency required of the Contractor".

Page 6-19, Article 609-6

In Item 4 under Density Quality Assurance, add "at a frequency equal to or greater than 5% of the QC sample frequency."

Insert the following after Item 4 under Density Quality Assurance:

6. By periodically directing the recalculation of random numbers for the Quality Control core or nuclear density test locations. The original QC test locations may be tested by QA and evaluated as verification tests.

LIMITS OF PRECISION

Page 6-19, Article 609-6

In the limits of precision table, delete the last three rows and substitute the following:

QA retest of prepared QC Gyratory Compacted Volumetric Specimens	± 0.015
Retest of QC Core Sample	± 1.2% (% Compaction)
Comparison of QA Core Sample	± 2.0% (% Compaction)
QA Verification Core Sample	± 2.0% (% Compaction)
Nuclear Comparison of QC Test	± 2.0% (% Compaction)
QA Nuclear Verification Test	± 2.0% (% Compaction)

ASPHALT CONCRETE PLANT MIX PAVEMENTS – DESCRIPTION

Page 6-20, Article 610-1

Insert the following after the last paragraph in this Article:

A high frequency of asphalt plant mix, density, or mix and density deficiencies occurring over an extended duration of time may result in future asphalt, which is represented by mix and/or density test results not in compliance with minimum specification requirements, being excluded from acceptance at an adjusted contract unit price in accordance with Article 105-3. This acceptance process may apply to all asphalt produced and /or placed and may continue until the Engineer determines a history of quality asphalt production and placement is reestablished.

MATERIALS

Page 6-21, Article 610-2

Delete reference of Anti-strip additive (chemical) to Article 1020-2 and substitute Article 1020-8.

COMPOSITION OF MIXTURES (MIX DESIGN AND JOB MIX FORMULA)

Page 6-21, Subarticle 610-3(A)

At the end of the second paragraph under this Subarticle, add the following sentence:

In addition, submit Superpave gyratory compactor printouts for all specimens compacted at N_{des} and N_{max} during the mix design process.

Insert the following paragraph after the second paragraph under this Subarticle:

For the final surface layer of the specified mix type, use a mix design with an aggregate blend gradation above the maximum density line on the 2.36 mm and larger sieves.

Insert the following at the end of the third paragraph under this Article:

When the percent of binder contributed from RAS or a combination of RAS and RAP exceeds 20 percent of the total binder in the completed mix, the virgin binder PG grade must be one grade below (both high and low temperature grade) the binder grade specified in Table 610-2 for the mix type.

Delete the fourth paragraph in this Subarticle and substitute the following:

For Type S 12.5D mixes, the maximum percentage of reclaimed asphalt material is limited to 15% and must be produced using virgin asphalt binder grade PG 76-22. For all other recycled mix types, when the percentage of RAP is 15 percent or less of the total mixture, the virgin binder PG grade must be as specified in Table 610-2 for the specified mix type. When the percentage of RAP is greater than 15 but not more than 25 percent of the total mixture, the virgin binder PG grade must be one grade below (both high and low temperature grade) the specified grade for the mix type. When the percentage of RAP is greater than 25 percent of the total mixture, the Engineer will establish and approve the asphalt binder grade.

Page 6-22, Subarticle 610-3(A)

Insert the following sentence at the end of the Item 4:

If natural sand is utilized in the proposed mix design, determine and report the Uncompacted Void Content of the natural sand in accordance with AASHTO T-304, Method A.

Page 6-23, Subarticle 610-3(A)

Under the quantities of mix components insert the following sentence:

When requested by the Engineer, submit to the Department's Materials and Tests Unit, in Raleigh, six (6) Superpave Gyratory Compactor specimens compacted to a height of 75 mm and to a void content (VTM) of 4.0% +/- 0.5% for performance rut testing with the Asphalt Pavement Analyzer.

JOB MIX FORMULA

Page 6-24, Subarticle 610-3(C)

Delete Table 610-1 and associated notes. Substitute the following:

TABLE 610-1
SUPERPAVE AGGREGATE GRADATION DESIGN CRITERIA

Standard	**Percent Passing Criteria (Control Points)**											
Sieves	**Mix Type (Nominal Maximum Aggregate Size)**											
	4.75 mm (a)		**9.5 mm (c)**		**12.5 mm (c)**		**19.0 mm**		**25.0 mm**		**37.5 mm**	
(mm)	**Min.**	**Max.**	**Min.**	**Max.**	**Min.**	**Max.**	**Min.**	**Max.**	**Min.**	**Max.**	**Min.**	**Max.**
50.0												100.0
37.5										100.0	90.0	100.0
25.0								100.0	90.0	100.0		90.0
19.0						100.0	90.0	100.0		90.0		
12.5				100.0	90.0	100.0		90.0				
9.5		100.0	90.0	100.0		90.0						
4.75	90.0	100.0		90.0								
2.36	65.0	90.0	32.0**(b)**	67.0**(b)**	28.0	58.0	23.0	49.0	19.0	45.0	15.0	41.0
1.18												
0.600												
0.300												
0.150												
0.075	4.0	8.0	4.0	8.0	4.0	8.0	3.0	8.0	3.0	7.0	3.0	6.0

(a) For Type S 4.75A, a minimum of 50% of the aggregate components shall be manufactured material from the crushing of stone.
(b) For Type SF 9.5A, the percent passing the 2.36mm sieve shall be a minimum of 60% and a maximum of 70%.
(c) For the final surface layer of the specified mix type, use a mix design with an aggregate blend gradation above the maximum density line on the 2.36 mm and larger sieves.

Page 6-25, Subarticle 610-3(C),

Delete Table 610-2 and associated notes. Substitute the following:

TABLE 610-2
SUPERPAVE MIX DESIGN CRITERIA

	Design	Binder	Compaction Levels			Volumetric Properties (c)			
Mix	ESALs	PG							
Type	millions	Grade	No. Gyrations @			VMA	VTM	VFA	%Gmm
(f)	(a)	(b)	N_{ini}	N_{des}	N_{max}	% Min.	%	Min. - Max.	@ N_{ini}
S-4.75A	<0.3	64 -22	6	50	75	20.0	7.0-15.0		
SF-9.5A	<0.3	64 -22	6	50	75	16.0	3.0 - 5.0	70 - 80	≤ 91.5
S-9.5B	0.3 - 3	64 -22	7	75	115	15.0	3.0 - 5.0	65 - 80	≤ 90.5
S-9.5C	3 - 30	70 -22	8	100	160	15.0	3.0 - 5.0	65 - 76	≤ 90.0
S-12.5C	3 - 30	70 -22	8	100	160	14.0	3.0 - 5.0	65 - 75	≤ 90.0
S-12.5D	> 30	76 -22	9	125	205	14.0	3.0 - 5.0	65 - 75	≤ 90.0
I-19.0B	< 3	64 -22	7	75	115	13.0	3.0 - 5.0	65 - 78	≤90.5
I-19.0C	3 - 30	64 -22	8	100	160	13.0	3.0 - 5.0	65 - 75	≤ 90.0
I-19.0D	> 30	70 -22	9	125	205	13.0	3.0 - 5.0	65 - 75	≤ 90.0
B-25.0B	< 3	64 -22	7	75	115	12.0	3.0 - 5.0	65 - 78	≤ 90.5
B-25.0C	> 3	64 -22	8	100	160	12.0	3.0 - 5.0	65 - 75	≤ 90.0
B-37.5C	> 3	64 -22	8	100	160	11.0	3.0 - 5.0	63 - 75	≤ 90.0
	Design Parameter					Design Criteria			
All	1. $\%G_{mm}$ @ N_{max}					≤ 98.0% **(d)**			
Mix	2. Dust to Binder Ratio ($P_{0.075}$ / P_{be})					0.6 - 1.4			
Types	3. Retained Tensile Strength (TSR) (AASHTO T 283 Modified)					85 % Min. **(e)**			

Notes: (a) Based on 20 year design traffic.
(b) When Recycled Mixes are used, select the binder grade to be added in accordance with Subarticle 610-3(A).
(c) Volumetric Properties based on specimens compacted to N_{des} as modified by the Department.
(d) Based on specimens compacted to N_{max} at selected optimum asphalt content.
(e) AASHTO T 283 Modified (No Freeze-Thaw cycle required). TSR for Type S 4.75A, Type B 25.0 and Type B 37.5 mixes is 80% minimum.
(f) Mix Design Criteria for Type S 4.75A may be modified subject to the approval of the Engineer

WEATHER, TEMPERATURE, AND SEASONAL LIMITATIONS FOR PRODUCING AND PLACING ASPHALT MIXTURES

Page 6-26, Article 610-4, Table 610-3

Delete the title of Table 610-3 and substitute the following title:

ASPHALT PLACEMENT- MINIMUM TEMPERATURE REQUIREMENTS

In the first column, third row; delete reference to the ACSC Types S 9.5A and S 12.5B mix.

Add the following minimum placing temperatures for mix types S 4.75A and SF 9.5A.

Asphalt Concrete Mix Type	Minimum Air Temperature	Minimum Road Surface Temperature
ACSC, Type S 4.75A, SF 9.5A	40°F (5°C)	50°F (10°C)

SPREADING AND FINISHING

Page 6-32, Article 610-8

Insert the following after the second sentence within the sixth paragraph in this Article,

Take necessary precautions during production, loading of trucks, transportation, truck exchanges with paver, folding of the paver hopper wings, and conveying material in front of the screed to prevent segregation of the asphalt mixtures.

Page 6-33, Article 610-8

At the end of the third full paragraph on this page, add the following sentence:

Waiver of the use of automatic screed controls does not relieve the Contractor of achieving plan grades and cross-slopes.

DENSITY REQUIREMENTS

Page 6-34, Article 610-10,

Delete Table 610-4 and substitute the following table and associated notes:

Table 610-4
MINIMUM DENSITY REQUIREMENTS

MIX TYPE	MINIMUM % of G_{mm}
SUPERPAVE MIXES	**(Maximum Specific Gravity)**
S 4.75A	85.0[(a,b)]
SF 9.5A	90.0
S 9.5X, S 12.5X, I 19.0X, B 25.0X, B 37.5X	92.0

(a) All S 4.75A pavement will be accepted for density in accordance with Article 105-3

(b) Compaction to the above specified density will be required when the S 4.75 A mix is applied at a rate of 100 lbs/sy (55 kg/m^2)

Page 6-34, Article 610-10

Delete the second paragraph in this Article and substitute the following:

Compact base and intermediate mix types (surface mixes not included) utilized for pavement widening of less than 4.0 feet (1.2 meters) and all mix types used in tapers, irregular areas and intersections (excluding full width travel lanes of uniform thickness), using equipment and procedures appropriate for the pavement area width and/or shape. Compaction with equipment other than conventional steel drum rollers may be necessary to achieve adequate compaction. Occasional density sampling and testing to evaluate the compaction process may be required. Densities lower than that specified in Table 610-4 will be accepted, in accordance with Article 105-3, for the specific mix types and areas listed directly above.

SURFACE REQUIREMENTS AND ACCEPTANCE

Page 6-35, Article 610-12

Delete the first paragraph in this Article and substitute the following:

Construct pavements using quality paving practices as detailed herein. Construct the pavement surface smooth and true to the plan grade and cross slope. Immediately correct any defective areas with satisfactory material compacted to conform with the surrounding area. Pavement imperfections resulting from unsatisfactory workmanship such as segregation, improper longitudinal joint placement or alignment, non-uniform edge alignment and excessive pavement repairs will be considered unsatisfactory and if allowed to remain in place will be accepted in accordance with Article 105-3.

When directed due to unsatisfactory laydown or workmanship, operate under the limited production procedures. Limited production for unsatisfactory laydown is defined as being restricted to the production, placement, compaction, and final surface testing (if applicable) of a sufficient quantity of mix necessary to construct only 2500 feet (750 meter) of pavement at the laydown width.

Remain on limited production until such time as satisfactory laydown results are obtained or until three consecutive 2500 foot (750 meter) sections have been attempted without achieving satisfactory laydown results. If the Contractor fails to achieve satisfactory laydown results after three consecutive 2500 foot (750 meter) sections have been attempted, cease production of that mix type until such time as the cause of the unsatisfactory laydown results can be determined. As an exception, the Engineer may grant approval to produce a different mix design of the same mix type if the cause is related to mix problem(s) rather than laydown procedures.

Mix placed under the limited production procedures for unsatisfactory laydown or workmanship will be evaluated for acceptance in accordance with Article l05-3.

DENSITY ACCEPTANCE

Page 6-36, Article 610-13

Delete the second paragraph on this page and substitute the following:

The pavement will be accepted for density on a lot by lot basis. A lot will consist of one day's production of a given job mix formula on a contract. As an exception, separate lots will be established when the one of the following occurs:

(6) Portions of pavement are placed in both "New" and "Other" construction categories as defined below. A lot will be established for the portion of the pavement in the "New" construction category and a separate lot for the portion of pavement in the "Other" construction category.

(7) Pavement is placed on multiple resurfacing maps, unless otherwise approved prior to paving. A lot will be established for each individual resurfacing map or portion thereof.

(8) Pavement is placed simultaneously by multiple paving crews. A lot will be established for the pavement placed by each paving crew.

(9) Pavement is placed in different layers. A lot will be established for each layer.

(10) Control strips are placed during limited production.

The Engineer will determine the final category and quantity of each lot for acceptance purposes.

Page 6-36, Article 610-13

Delete the first sentence in the third paragraph on this page and insert the following:

The "New" construction category will be defined as pavements of uniform thickness, exclusive of irregular areas, meeting all three of the following criteria:

Delete the sixth paragraph in this Article and substitute the following:

A failing lot for density acceptance purposes is defined as a lot for which the average of all test sections, and portions thereof, fails to meet the minimum specification requirement. If additional density sampling and testing, beyond the minimum requirement, is performed and additional test sections are thereby created, then all test results shall be included in the lot average. In addition, any lot or portion of a lot that is obviously unacceptable will be rejected for use in the work.

Page 6-36, Article 610-13

Delete the last paragraph on this page and substitute the following:

Any density lot not meeting minimum density requirements detailed in Table 610-4 will be evaluated for acceptance by the Engineer. If the lot is determined to be reasonably acceptable, the mix will be paid at an adjusted contract price in accordance with Article 105-3. If the lot is

determined not to be acceptable, the mix will be removed and replaced with mix meeting and compacted to the requirement of these specifications.

BASIS OF PAYMENT, ASPHALT PAVEMENTS

Page 6-37, Article 610-16

Add the following to the second paragraph:

The quantity of hot mix asphalt pavement, measured as provided in Article 610-15, will be paid for at the contract unit prices per ton (metric ton) for "Asphalt Concrete Surface Course, Type S 4.75A, and SF 9.5A".

Add the following to the payment item description:

Asphalt Concrete Surface Course, Type S 4.75A..... Ton (Metric Ton)
Asphalt Concrete Surface Course, Type SF 9.5A..... Ton (Metric Ton)

Delete reference to the Asphalt Concrete Surface Course, Types S 9.5A and S 12.5B in both the second paragraph and in the payment description.

ASPHALT BINDER FOR PLANT MIX - METHOD OF MEASUREMENT

Page 6-39, Article 620-4

Delete the first sentence of the second paragraph on this page and substitute the following:

Where recycled plant mix is being produced, the grade of asphalt binder to be paid for will be the grade for the specified mix type as required in Table 610-2 unless otherwise approved.

CONSTRUCTION REQUIREMENTS

Page 6-43, Article 650-5

Add the following paragraph after the first paragraph under this Article:

Do not place open-graded asphalt friction course between October 31 and April 1 of the next year, unless otherwise approved. Place friction course, Type FC-1 mixes, only when the road surface temperature is 50°F (10°C) or higher and the air temperature is 50°F (10°C) or higher. The minimum air temperature for Type FC-1 Modified and FC-2 Modified mixes will be 60°F (15°C).

AGGREGATES FOR ASPHALT PLANT MIXES

Page 10-34, Subarticle 1012-1(B)4

Delete this Subarticle and substitute the following:

(4) Flat and Elongated Pieces:

Use coarse aggregate meeting the requirements of Table 1012-1 for flat and elongated pieces when tested in accordance with ASTM D 4791 (Section 8.4) on the No. 4 (4.75 mm) sieve and larger with a 5:1 aspect ratio (maximum to minimum) for all pavement types, except there is no requirement for Types S 4.75A, SF 9.5A, and S 9.5B.

Page 10-35, Table 1012-1

Delete Table 1012-1 and substitute the following:

Table 1012-1
AGGREGATE CONSENSUS PROPERTIES[a]

Mix Type	Course Aggregate Angularity[b]	Fine Aggregate Angularity	Sand Equivalent	Flat & Elongated 5 : 1 Ratio
		% Minimum	% Minimum	% Maximum
	ASTM D 5821	AASHTO T 304 Method A	AASHTO T 176	ASTM D 4791 Section 8.4
S 4.75 A		40	40	
SF 9.5 A S 9.5 B I 19.0 B B 25.0 B	75 / -	40	40	10[c]
S 9.5 C S 12.5 C I 19.0 C B 25.0 C B 37.5 C	95 / 90	45	45	10
S 12.5 D I 19.0 D	100 / 100	45	50	10
OGAFC	100 / 100	N/A	N/A	10

(a) Requirements apply to the course aggregate blend and/or fine aggregate blend
(b) 95/90 denotes that 95% of the course aggregate (+No.4 or + 4.75mm sieve)has one fractured face and 90% has two or more fractured faces.
(c) Does not apply to Mix Types SF 9.5 A or S 9.5 B

Page 10-36, Subarticle 1012-1(C)1

Insert the following after the fourth paragraph on this page:

When natural sand is utilized in "C" or "D" level asphalt mixes, do not exceed the maximum natural sand percentage in the mix design and/or production aggregate blend detailed in Table 1012-1A.

Table 1012-1A

Uncompacted Void Content of Fine Aggregate AASHTO T 304 Method A	Maximum Percent Natural Sand Included in Mix Design and/or Production*
Less than 42.0	10
Equal to 42.0 to 44.9	15
Equal to 45.0 and greater	20

*Maximum percent natural sand may be exceeded with approval from Pavement Construction Engineer upon satisfactory evaluation of pavement performance testing

FINE AGGREGATE ANGULARITY

Page 10-36, Subarticle 1012-1(C)6

Delete reference to AASHTO TP 33 Method A and substitute AASHTO T 304, Method A.

Page 10-37, Subarticle 1012-1(H)

Delete this Subarticle. It is a duplicate of Subarticle 1012-1(F) located on Page 10-36.

ASPHALT BINDER

Page 10-46, Article 1020-2

Delete the first paragraph under this Article and substitute the following:

Use Performance Graded Asphalt Binder meeting the requirements of AASHTO M 320. See Article 610-3 for the specified grades. Submit a Quality Control Plan for asphalt binder production in conformance with the requirements of AASHTO R 26 to the Materials and Tests Unit.

SP6R01

ASPHALT BINDER CONTENT OF ASPHALT PLANT MIXES: **11-21-00$_R$**

The approximate asphalt binder content of the asphalt concrete plant mixtures used on this project will be as follows:

Asphalt Concrete Base Course, Type B 25.0__	4.3%
Asphalt Concrete Intermediate Course, Type I 19.0__	4.7%
Asphalt Concrete Surface Course, Type S 4.75A	7.0%
Asphalt Concrete Surface Course, Type SF 9.5A	6.5%
Asphalt Concrete Surface Course, Type S 9.5__	6.0%
Asphalt Concrete Surface Course, Type S 12.5__	5.5%

The actual asphalt binder content will be established during construction by the Engineer within the limits established in the Standard Specifications or Project Special Provisions.

SP6R15

PRICE ADJUSTMENT - ASPHALT BINDER FOR PLANT MIX: **11-21-00**

Price adjustments for asphalt binder for plant mix will be made in accordance with Section 620 of the Standard Specifications as modified herein.

The base price index for asphalt binder for plant mix is $218.06 per ton (metric ton).

This base price index represents an average of F.O.B. selling prices of asphalt binder at supplier's terminals on September 1, 2004.

SP6R25

GUARDRAIL POSTS AND OFFSET BLOCKS: **06-22-04**

Revise the *2002 Standard Specifications* as follows:

Page 10-69, Subarticle 1046-3

Delete this sub-article in its entirety and replace with the following:

1046-3 POSTS AND OFFSET BLOCKS.

(A) General:

The Contractor may at his option furnish either of the following types of steel guardrail posts. Only one type of post will be permitted at any one continuous installation. Use structural steel posts throughout the project, unless otherwise directed or detailed in the plans.

1. Steel W6 x 8.5 or W6 x 9.0 posts
2. Steel 4.5" x 6.0" "C" shape posts (C150 x 12.2 kg/m)

The Contractor may at his option furnish either of the following types of treated timber posts if specifically directed or detailed in the plans. Only one type of post will be permitted at any one continuous installation.

1. Timber 6" x 8" (152 mm x 203 mm) posts.
2. Timber 8" x 8" (203 mm x 203 mm) posts.

(B) Structural Steel Posts:

Fabricate steel posts for guardrail of the size and weight shown on the plans from structural steel complying with the requirements of Section 1072. Metal from which C shape posts are fabricated shall meet the requirements of ASTM A570 for any grade of steel, except that mechanical requirements shall meet the requirements of ASTM A36. Punch or drill the holes for connecting bolts. Burning will not be permitted. After fabrication, the posts shall be galvanized in accordance with Section 1076.

(C) Treated Timber Posts:

Timber guardrail posts shall be of treated southern pine meeting the requirements of Article 1082-2 and 1082-3.

Bore bolt holes to a driving fit for the bolts. A minus tolerance of 1 percent will be allowed in the length of the post. Perform all framing and boring before the posts receive preservative treatment.

(D) Offset Blocks:

Provide 8-inch deep recycled plastic or composite offset blocks that have been approved for use with the guardrail shown in the standard drawings and/or plans. Only one type of offset block will be permitted at any one continuous installation. Prior to beginning the installation of recycled offset block, submit the FHWA acceptance letter for each type of block to the Engineer for approval.

Treated timber offset blocks with steel beam guardrail will not be allowed unless required by Specifications, directed by the Engineer or detailed in the plans. Steel offset blocks with steel beam guardrail will not be allowed.

Recycled plastic or composite offset blocks shall be made from no less than 50% recycled plastic or composite, and shall meet the following minimum requirements:

- Specific Gravity: 0.950
- Compressive Strength in Lateral Direction: .....1600 psi (11 MPa)
- Maximum Water Absorption: .....10% by weight
- Maximum Termite and Ant Infestation: 10%
- Testing.....Shall pass NCHRP Report 350, Test Level 3 by CRASH TESTING

Revise the *2002 Standard Roadway Drawings* as follows:

Sheet 4 of 6, Standard 862.03, delete the note and substitute the following:

Note: The midpost and offset block of the WTR section will require special bolt hole drilling in the thrie beam offset block and line post.

SP8R57

GUARDRAIL ANCHOR UNITS, TYPE 350: **04-20-04**

DESCRIPTION

Furnish and install guardrail anchor units in accordance with the details in the plans, the applicable requirements of Section 862 of the Standard Specifications, and at locations shown in the plans.

MATERIALS

The Contractor may at his option, furnish any one of the guardrail anchor units.

Guardrail anchor unit (ET-2000) as manufactured by:

TRINITY INDUSTRIES, INC.
2525 N. STEMMONS FREEWAY
DALLAS, TEXAS 75207
TELEPHONE: 1-800-644-7976

The guardrail anchor unit (SKT 350) as manufactured by:

ROAD SYSTEMS, INC.
3616 OLD HOWARD COUNTY AIRPORT
BIG SPRING, TEXAS 79720
TELEPHONE: (915) 263-2435

Prior to installation the Contractor shall submit to the Engineer:

1. FHWA acceptance letter for each guardrail anchor unit certifying it meets the requirements of NCHRP Report 350, Test Level 3, in accordance with Section 106-2 of the Standard Specifications.

2. Certified working drawings and assembling instructions from the manufacturer for each guardrail anchor unit in accordance with Section 105-2 of the Specifications.

No modifications shall be made to the guardrail anchor unit without the express written permission from the manufacturer. Perform installation in accordance with the details in the plans, and details and assembling instructions furnished by the manufacturer.

CONSTRUCTION

Guardrail end delineation is required on all approach and trailing end sections for both temporary and permanent installations. Guardrail end delineation consists of yellow reflective sheeting applied to the entire end section of the guardrail in accordance with Section 1088-3 of the Standard Specifications and is incidental to the cost of the guardrail anchor unit.

MEASUREMENT AND PAYMENT

Measurement and payment will be made in accordance with Articles 862.5 and 862-6 of the Standard Specifications.

Payment will be made under:

Guardrail Anchor Units, Type 350 .....Each

SP8R65

STREET SIGNS AND MARKERS AND ROUTE MARKERS: **7-1-95**

Move any existing street signs, markers, and route markers out of the construction limits of the project and install the street signs and markers and route markers so that they will be visible to the traveling public if there is sufficient right of way for these signs and markers outside of the construction limits.

Near the completion of the project and when so directed by the Engineer, move the signs and markers and install them in their proper location in regard to the finished pavement of the project.

Stockpile any signs or markers that cannot be relocated due to lack of right of way, or any signs and markers that will no longer be applicable after the construction of the project, at locations directed by the Engineer for removal by others.

The Contractor will be responsible to the owners for any damage to any street signs and markers or route markers during the above described operations.

No direct payment will be made for relocating, reinstalling, and/or stockpiling the street signs and markers and route markers as such work will be considered incidental to other work being paid for by the various items in the contract.

SP9R01

AGGREGATE PRODUCTION: **11-20-01**

Provide aggregate from a producer who utilizes the new Aggregate Quality Control/Quality Assurance Program that is in effect at the time of shipment.

No price adjustment is allowed to contractors or producers who utilize the new program. Participation in the new program does not relieve the producer of the responsibility of complying

with all requirements of the Standard Specifications. Copies of this procedure are available upon request from the Materials and Test Unit.

SP10R05

FINE AGGREGATE: **11-19-02**

Revise the 2002 Standard Specifications as follows:

Page 10-17, Table 1005-2

Make the following change to the table:

For Standard Size 2MS the following gradation change applies.

The minimum percent shown for material passing the No. 8 (2.36mm) sieve has been changed from 84 to **80.**

SP10R15

BORROW MATERIAL **02-17-04**

Revise the 2002 Standard Specifications as follows:

Page 10-44

Section 1018-2 II (b) Delete the last sentence in its entirety.

SP10R17

DRUMS: **07-16-02**

Revise the 2002 Standard Specifications as follows:

Page 10-195, Subarticle 1089-5(C)

Delete the first (1st) sentence of the first (1st) paragraph and insert the following:

"Provide a minimum of three orange and two white alternating horizontal circumferential stripes covering the entire outside with each drum."

SP11R05

PORTABLE CONCRETE BARRIER: **11-19-02**

Portable Concrete Barrier used on this project must meet one of the following:

- NC Approved NCHRP 350 Portable Concrete Barrier (design can be found at http://www.doh.dot.state.nc.us/preconstruct/traffic/congestion/TC/ or can be obtained by calling the Traffic Control Section at (919) 250-4159)

- Other NCHRP 350 Portable Concrete Barrier as approved by the Engineer and the Traffic Control Section
- NC Approved NCHRP 230 Portable Concrete Barrier in Roadway Standard Drawing 1170.01 manufactured before October 1, 2002

SP11R10

PAVEMENT MARKING GENERAL REQUIREMENTS: **07-16-02**

Revise the 2002 Standard Specifications as follows:

Page 12-10, Subarticle 1205-3(J)

Delete the first (1st) sentence of the first (1st) paragraph and insert the following:

"Have at least one member of every pavement marking crew working on a project certified through the NCDOT Pavement Marking Technician Certification Process. For more information contact the Traffic Control, Marking and Delineation Section of the North Carolina Department of Transportation at 919-250-4151 or http://www.doh.dot.state.nc.us/preconstruct/traffic/congestion/TC/"

SP12R01

REPLACE LENSES IN MARKERS: **10-14-04**

The Contractor shall replace the lenses from the castings that are in place. Existing castings shall be cleaned without removing them from the pavement. The castings shall be cleaned in accordance with manufacturer's recommendations prior to replacing the lenses. The old lenses shall be replaced with new lenses, using adhesive required by the manufacturer.

Missing castings shall be replaced. Broken castings shall be removed and replaced. In both cases the "slot" for the castings shall be properly prepared prior to installing the new casting. Removal of broken castings and preparation of "slots" shall be considered incidental to the work of replacing castings and no direct payment will be made.

Lenses

The Contractor's attention is directed to the fact that Type III reflector lenses will be used. The reflector types and colors are as listed below.

TYPE	FACE A	FACE B
Type III	Crystal	Red

Payment will be made under:

Pay Item	**Pay Unit**
Replace Lenses in Markers	Each

GEOTECHNICAL ENGINEERING SCOPE OF WORK 10-12-04

1.0 GENERAL

The scope of work consists of developing an engineered retention system to safely re-open all lanes of traffic to the traveling public on I-40 between Mile Marker 3 and 4. The system will mitigate the 2 landslides on I-40 that have occurred as a result of the recent hurricanes.

Construct the retention system to stabilize the roadway before beginning any work for the toe scour protection.

The retention system and toe scour protection will be maintenance free.

The geotechnical firm should prepare geotechnical design recommendation reports for use in designing embankments, slopes, buttresses, retaining walls, toe scour protection, and temporary structures. The geotechnical firm should also determine if additional subsurface information is required based upon the subsurface information provided by NCDOT and the final roadway and structure designs. Perform any additional subsurface investigation and laboratory testing in accordance with the current NCDOT *Geotechnical Unit Guidelines and Procedure Manual*.

2.0 DESCRIPTION OF WORK

Design slopes, buttresses, retaining walls, toe scour protection, and temporary structures in accordance with the current allowable strength design AASHTO *Standard Specifications for Highway Bridges*, NCDOT *Structure Design Manual*, NCDOT *Roadway Design Manual* and the Geotechnical Engineering Unit *Roadway and Structure Foundation Guidelines*.

A. Slopes

Design all slopes to be maintenance free. Design all unreinforced fill slopes for a slope of 2:1 (H:V) or flatter and a minimum stability factor of safety of 1.3. Design all cut slopes for a slope of 1.5:1 (H:V) or flatter and a minimum stability factor of safety of 1.5. Use limiting equilibrium methods, such as Modified Bishop, Simplified Janbu, Spencer or any other generally accepted method for slope stability analysis.

B. Buttresses

Design all buttresses to be maintenance free. Design all buttresses for a minimum stability factor of safety of 1.3. Use limiting equilibrium methods, such as Modified Bishop, Simplified Janbu, Spencer or any other generally accepted method for slope stability analysis.

C. Retaining Walls

Design all permanent retaining walls to be maintenance free. Extensible reinforcement is not allowed for any permanent retaining walls. Modular block walls are not allowed for critical wall structures. Critical wall structures include

walls supporting or adjacent to interstate highways, bridge abutments, wing walls and walls over 18 feet (5.5 meters) in height.

The following list of retaining wall types are acceptable for consideration for permanent applications:

- Gravity wall
- Cast-in-place cantilever wall
- Modular block wall
- Mechanically stabilized earth (MSE) wall
- Soldier pile cantilever wall with either a cast-in-place face or precast panels
- Anchored tieback wall
- Soil nail wall

Design and construct permanent retaining walls, with the exception of gravity walls and cast-in-place cantilever walls, in accordance with the applicable NCDOT *Project Special Provisions*. For each retaining wall, with the exception of gravity walls, submit a wall layout and design. The wall layout submittal should include the following:

- Wall envelope with top of wall, bottom of wall, existing ground and finished grade elevations at incremental stations.
- Wall alignment with stations and offsets.
- Typical sections showing top and bottom of wall, drainage, embedment, slopes, barriers, fences, etc.
- Calculations for bearing capacity, global stability and settlement.
- Details of conflicts with utilities and drainage structures.
- Roadway plan sheets showing the wall (half size).
- Roadway cross sections showing the wall (half size).
- Traffic control plans showing the wall (half size).

Gravity walls must be designed and constructed in accordance with the NCDOT Roadway Standard Drawings and the NCDOT 2002 *Standard Specifications*. Gravity walls do not require any submittals. Cast-in-place cantilever walls must be designed and constructed in accordance with the NCDOT 2002 *Standard Specifications.*

Any slopes behind walls are required to be 2:1 (H:V) or flatter. Embed retaining walls in accordance with FHWA Manual Demonstration Project 82 Reinforced Soil Structures MSEW and RSS or a minimum of 2 feet (600 mm), whichever is greater. The wall embedment depth is from the grade that intersects the front of the wall (either finished grade or natural ground elevation) or 100 year scour elevation, whichever is lower, to the top of the leveling pad.

Drainage over the top of retaining walls is not allowed. Sags in the top of walls should be avoided. Direct runoff above and below walls away from walls, if possible, or collect runoff at the walls and transmit it away. Curb and gutter or cast-in-place single faced barrier with paving up to the wall is required when runoff can not be directed away from the back or front of the wall. A paved

concrete ditch with a minimum depth of 6 inches (150 mm) is required at the top of walls when slopes steeper than 6:1 (H:V) intersect the back of walls.

Precast or cast-in-place coping is required for walls without a cast-in-place face with the exception of when a barrier is integrated into the top of the wall. Extend coping or cast-in-place face a minimum of 6 inches (150 mm) above where the finished or existing grade intersects the back of the wall. Design concrete barriers integrated into retaining walls for traffic impact in accordance with AASHTO. A fence is required on top of the facing, coping or barrier or immediately behind the wall if there is no slope behind the wall.

D. Toe Scour Protection

Design all toe scour protection to be maintenance free. Design a toe scour protection system that is flexible, durable, impact and abrasion resistant and maintenance free. Design the toe scour protection system to withstand, intact, a sustained peak flow of 41,000 ft^3/sec that is 20 feet in height above the stream bed.

Design and construct the toe scour protection system in accordance with FHWA *Hydraulic Engineering Circular No. 11 Design of Rip Rap Revetment.*

E. Temporary Structures

Design temporary retaining structures, which include earth retaining structures and cofferdams, in accordance with Section 4 of the 1995 or current allowable stress design AASHTO *Guide Design Specifications for Bridge Temporary Works* and the NCDOT Temporary Shoring for Maintenance of Traffic Special Provision. The only submittal required to use the standard sheeting design is the "Standard Shoring Selection Form".

Design and construct temporary retaining walls in accordance with the applicable NCDOT *Project Special Provision.* For temporary retaining walls, do not place a barrier within 5 feet (1.5 meters) of the face of the wall. If the barrier is between 5 and 9 feet (1.5 to 2.7 meters) from the face of the wall, anchor the barrier in accordance with Roadway Standard Detail No. 11.70.01.

3.0 SUBMITTALS

Submit all slope, buttress, retaining wall, toe scour protection, and temporary structure designs for review. Seal all design recommendation reports, plans, special provisions and calculations by a registered professional engineer licensed in the state of North Carolina.

If temporary shoring is required to construct a retaining wall, submit the temporary shoring design as part of the wall design submittal. A review time of 3 business days is required for each submittal.

4.0 CONSTRUCTION REQUIREMENTS

All construction and materials must be in accordance with the NCDOT 2002 *Standard Specifications* and current NCDOT *Project Special Provisions*. The Contractor is responsible for investigating and proposing remedial measures for any construction

problems related to foundations, retaining walls, subgrades, settlement, slopes, and construction vibrations. The NCDOT Geotechnical Engineering Unit will review and approve these proposals.

Do not allow vibratory compaction of fill within 100 feet (30 meters) of any existing structure. Do not allow pile driving or subsurface drilling of foundations within 500 feet (150 meters) of any existing structure. If these requirements can not be met or damage occurs to any existing structure, employ the services of a qualified private engineering firm experienced in the effects of construction induced vibrations on existing structures, to do a study of the structure's response to vibration. The purpose of this study is to set vibration limits to avoid damage to the existing structure and provide modifications to construction methods as necessary. Any existing structure is not intended to include existing bridges unless they are historic or will remain in service upon completion of construction. Existing bridges used for detours that will be taken out of service upon completion of construction should be protected from vibration damage to the extent necessary for the safety of the traveling public.

Geotechnical Engineering Unit
ROADWAY AND STRUCTURE FOUNDATION GUIDELINES

The geotechnical firm is responsible for (but not limited to) addressing the following items for the roadway and structure foundation design of the project.

1. Analyze the stability of embankments and utilize recognized geotechnical engineering designs and construction methods to ensure embankment stability.
2. Determine the feasibility and recommend types of retaining walls or shoring for permanent or temporary situations. Design all retaining walls in accordance with the current allowable stress design AASHTO *Standard Specifications for Highway Bridges* and applicable FHWA manuals.
3. Analyze the stability of cut sections. Utilize recognized geotechnical engineering designs and construction methods to ensure cut slope stability.

The geotechnical firm's attention is directed to the latest design guide entitled *Soils and Foundations Workshop Manual*, NHI Course No. 13212, Publication No. FHWA HI-88-009, published by the FHWA.

TOE SCOUR PROTECTION October 12, 2004

1.0 GENERAL

Construct the Toe Scour Protection in accordance with Section 235 of the 2002 Standard Specifications, the details shown on the plans, this provision, and as directed by the Engineer. Schedule a preconstruction meeting with representatives of the Contractor, Geotechnical Engineering Unit, and the Engineer.

The Toe Scour Protection will be required at Stations 14+75 ± to 22+00 ± -L-, and at Stations 32+50 ± to 35+50 ± -L-, and other locations as directed by the Engineer.

Density requirements will not apply to the Toe Scour Protection construction, but compact to the satisfaction of the Engineer.

2.0 CONSTRUCTION

Unless otherwise directed by the Engineer, construct the Toe Scour Protection with the slopes as indicated on the plan detail. Grade the rock so that the smaller pieces are uniformly distributed throughout the mass. The surface must be free of obstructions, debris, and segregated pockets of small pieces or groups of large pieces, which could cause large open voids within the rock mass.

Place Filter Fabric as detailed in the plans. Grade the surfaces that receive Filter Fabric to lines and grades shown on the plans, unless otherwise directed by the Engineer. The surface must be free of obstructions, debris, and large voids.

At the time of installation, the Filter Fabric will be rejected if it has defects, rips, holes, flaws, deterioration, or damage incurred during manufacture, transportation or storage.

Lay the Filter Fabric smooth and free from tension, stress, folds, wrinkles, or creases. Where a layer of Filter Fabric becomes discontinuous, such as at the end of a roll, a minimum overlap of 12 inches is required with the upper fabric placed over the lower fabric. Use wire staples as needed to hold the fabric in place until it is covered with fill material. Do not operate equipment directly on the fabric. In the event fabric is displaced or damaged, reposition or replace the fabric at no additional cost to the Department.

Place the Rock Embankment Material in maximum 4-foot lifts.

Place a 9-inch thick layer of Rip Rap, Class A on top of each lift of the Toe Scour Protection.

Place Select Material, Class VI (#57 stone backfill) on top of the final lift of Rip Rap, Class A. Compact #57 stone backfill with at least four passes of an 8 - 10 ton (or heavier) vibratory roller in the vibratory mode, or as directed by the Engineer.

Lay the Ring Nets smooth and free from folds, wrinkles, or creases. Where a layer of Ring Nets becomes discontinuous, such as at the end of a roll, a minimum overlap of 12 inches is required with the upper Ring Net placed over the lower Ring Net. Stake as needed to hold the ring nets in place until it is covered with fill material. Do not operate equipment directly on the Ring Nets. In the event the Ring Nets are displaced or damaged, reposition or replace the Ring Net at no additional cost to the Department.

3.0 MATERIALS

A. Rock Embankment Material

For the purposes of this provision Rock Embankment Material refers to clean, non-degradable, durable, blasted rock material with a diameter of at least 2 feet but not greater than 4 feet. The Contractor shall identify the material source for approval by the Engineer before the preconstruction meeting. On-site material meeting the 2 to 4 foot diameter criteria may be used. The rocks must have a minimum density of 160 pounds per cubic foot and a minimum weight of 1200 pounds each.

B. Select Material, Class VI

The top 12 inches of the material on top of the Toe Scour Protection must be Select Material, Class VI (#57 stone) meeting the requirements of Section 1016 of the 2002 Standard Specifications.

C. Rip Rap, Class A

The top of each lift must be Rip Rap, Class A meeting the requirements of Section 1042 of the 2002 Standard Specifications.

D. Filter Fabric

For Filter Fabric use Type 2 Engineering Fabric meeting the requirements of Section 1056 of the 2002 Standard Specifications. Furnish a Type 1 Certified Mill Test Report, Type 2 Certified Mill Test Report, or Type 4 Certified Mill Test Report for the fabric in accordance with Article 106-3; however, the material will be subject to inspection, test, or rejection by the Engineer at any time.

E. Ring Net

Obtain Ring Net materials from:

Geobrugg North America, LLC
Geobrugg Protection Systems
551 W. Cordova, PMB 730
Santa Fe, New Mexico 87505
(505) 438-6161
www.us.geobrugg.com

The Ring Nets shall be ROCCO 12/3/300. The nets shall be made from interlocking steel rings, each ring with a nominal diameter of 12 inches. Rings shall be composed of steel wire coiled into a loop with 12 loops per ring. Three steel clips shall be fastened around each ring to hold the ring together. Each ring shall connect to the four adjoining rings by passing through them.

The Ring Nets shall be manufactured and assembled in accordance with the contract documents and plans and the manufacturer's standards and requirements.

The wire shall be high tensile strength alloy steel wire with a nominal diameter of 0.118 inches and the minimum tensile strength of the wire shall be 256,000 pounds per square inch.

The wire shall be galvanized with Supercoating®, a 95% zinc / 5% aluminum coating, and the minimum weight of the coating shall be 0.655 ounces per square foot.

4.0 METHOD OF MEASUREMENT

A. Rock Embankment

The quantity of Rock Embankment Material to be paid for will be the actual number of tons, which has been incorporated into the completed and accepted work. The material will be measured by weighing in trucks on certified platform scales or other certified weighing devices or by methods approved by the Engineer.

B. Select Material, Class VI

The quantity of Select Material, Class VI (#57 stone) to be paid for will be the actual number of tons, which has been incorporated into the completed and accepted work. The material will be measured by weighing in trucks on certified platform scales or other certified weighing devices or by methods approved by the Engineer.

C. Rip Rap, Class A

The quantity of Rip Rap, Class A to be paid for will be the actual number of tons, which has been incorporated into the completed and accepted work. The material will be measured by weighing in trucks on certified platform scales or other certified weighing devices or by methods approved by the Engineer.

D. Filter Fabric

The quantity of Filter Fabric to be paid for will be the area in square yards, measured along the surface of the ground, over which the fabric has been acceptably placed. No separate measurement for payment will be made for the overlapping of fabric.

E. Ring Net

The quantity of Ring Net to be paid for will be the area in square yards, measured along the face of the Ring Net, over which the net has been acceptably placed. All hardware required shall be incidental to the cost of the Ring Nets.

5.0 BASIS OF PAYMENT

A. Rock Embankment

The quantity of Rock Embankment Material will be paid for at the contract unit price per ton for "Rock Embankment Material." Payment will be full compensation for all work and materials covered by this provision, including but not limited to furnishing, hauling, handling, placing, compacting, and maintaining the select material.

B. Select Material, Class VI

The quantity of select material will be paid for at the contract unit price per ton for "Select Material, Class VI." Payment will be full compensation for all work and materials covered by this provision, including but not limited to furnishing, hauling, handling, placing, compacting, and maintaining the select material.

C. Rip Rap, Class A

The quantity of Rip Rap, Class A will be paid for at the contract unit price per ton for "Rip Rap, Class A." Payment will be full compensation for all work and materials covered by this provision, including but not limited to furnishing, hauling, handling, placing, compacting and maintaining the select material.

D. Filter Fabric

The quantity of Filter Fabric will be paid for at the contract unit price per square yard of "Filter Fabric." Payment will be full compensation for all work covered by this provision, including but not limited to testing, furnishing, hauling, placing, and overlapping the filter fabric.

E. Ring Net

The quantity of Ring Net will be paid for at the contract unit price per square yard of "Ring Net." Payment will be full compensation for all work covered by this provision, including but not limited to testing, furnishing, hauling, placing, and connecting the ring nets. All hardware required shall be incidental to the cost of the Ring Nets.

Payment will be made under

Rock Embankment .....Tons
Select Material, Class VI.....Tons
Rip Rap, Class A.....Tons
Filter Fabric.....Square Yards
Ring Net.....Square Yards

PERMANENT ANCHOR TIEBACK RETAINING WALL: **10-21-04**

1.0 General:

The work under this section consists of design, plan preparation, furnishing materials, and construction of proposed Permanent Tieback Retaining Wall At Slide #2 from Station 17+00.00 -L- to Station 22+25.00 -L-, and proposed Permanent Tieback Retaining Wall At Slide #1 from Station 33+00.00 -L- to Station 35+00.00 -L- in accordance with the plans, these specifications and in reasonably close conformity with the lines, grades, and dimensions shown on the plans.

A permanent anchor tieback anchor retaining wall consists of soldier piles and timber lagging supported by post-tensioned ground anchors with a permanent shotcrete facing.

Submit 8 copies of plans and calculations to the Engineer for review and approval and allow 5 calendar days from the date they are received until they are returned by the Engineer.

A pre-construction meeting must be held prior to the start of the work and must be attended by representatives from the Prime Contractor, Wall Subcontractor, Resident Engineer, Materials and Test Unit, and Geotechnical Engineering Unit to discuss construction details and inspection of the wall construction. Review of all submittals must be completed prior to scheduling the pre-construction meeting.

No value engineering construction proposal will be allowed.

2.0 Design Criteria:

Wall design must be in accordance with the criteria set forth in the AASHTO Specifications for Highway Bridges and the FHWA Manual "Ground Anchors and Anchored Systems Manual", Publication No FHWA-IF-99-015.

Use the soil parameters shown on the plans to design the tieback wall.

Design all wall components for a 100-year design life.

Include calculations and details of the shotcrete concrete facing in the design package. Design a minimum 6 inch (150 mm) thick shotcrete concrete facing to be constructed on a minimum 6 inch (150 mm) thick by 12 inch (300 mm) wide unreinforced concrete

leveling pad. Construct the concrete facing of the tieback retaining wall in accordance with Section 825 of the Standard Specifications with an ordinary surface finish.

Embed the wall a minimum of 24 inches (600 mm) below the proposed finished grade in front of the wall.

Install soldier piles a minimum of 5 feet (1.5 meters) into competent bedrock.

Install permanent tieback anchors through boulder fill into competent bedrock.

Provide plans containing sufficient information to lay out and construct the wall including but not limited to the following:

1. Elevation views showing all proposed and existing ground lines and stations, soldier piles, shotcrete facing, concrete walers, leveling pad elevations, construction joint locations.

2. Plan views showing all horizontal layout information.

3. Section views showing in detail all wall components, the proximity of other structures, proposed and existing ground lines, etc.

4. Specific details of wall components.

5. Construction sequence.

3.0 Materials:

All materials are to be as specified or better, and as approved by the Engineer. Submit requests for substitutions to the Engineer five days before intended installation.

A. Fabricate tieback tendons from single or multiple elements of the following:

1. Steel bars conforming to ASTM Designation A722, "Uncoated High-Strength Steel Bars for Prestressed Concrete."

2. Seven-wire strand conforming to ASTM Designation A416/416M, "Uncoated Seven-Wire Stress-Relieved Strand for Prestressed Concrete."

3. Compact seven-wire strands conforming to ASTM Designation A779, "Uncoated Seven-Wire Compacted, Stress-Relieved Steel Strand for Prestressed Concrete."

Submit to the Engineer mill test reports for each heat or lot of prestressing material used to fabricate tendons.

B. Submit cement anchor grout mix design to the State Materials Engineer for approval. Supply Portland Cement conforming to ASTM Specification C-150, Type I, II, or III, and potable water. Supply cement that is fresh, free from lumps or any indication of hydration. Use admixtures that will impart low water content, flowability and minimum bleeding in the cement grout only with the consent of the Engineer. Do not use admixtures that contain chemicals that may have a harmful effect on the prestressing steel or cement. If admixtures are to be used, submit to the Engineer prior to using the admixture, the manufacturer's literature indicating the type of admixture and the manufacturer's recommendations for mixing the admixtures with grout. Expansive additives which cause air bubbles in the grout will not be allowed. Use grouting equipment that includes a mixer capable of producing a grout free of lumps and undispersed cement. Use a positive displacement grout pump. Equip the pump with a pressure gauge to monitor grout pressures at the nozzle, using a gauge capable of measuring pressures of at least 150 psi (1035 kPa), or twice the actual grout pressures used.

Size the grouting equipment to enable the tieback to be grouted in one continuous operation. Use mixing and storage times that do not cause excessive temperature build-up in the grout. Use a mixer capable of continuously agitating the grout.

C. Use anchorage and hardware suitable for the type of anchor tendon used and capable of developing 95% of the guaranteed specified minimum ultimate tensile strength of the tendon when tested in the unbonded state without failure of the tendon. Supply anchorage devices capable of holding the prestressing steel at a load producing a stress of not less than 95% of the guaranteed specified minimum ultimate tensile strength of the prestressing steel without exceeding anticipated set and without failure of either the anchorage or the prestressing steel. Anchorages shall be capable of lift-off, detensioning or retensioning a tendon at any time prior to grouting.

Fabricate the bearing plate from steel plate conforming to AASHTO M270 Grade 250 Specifications. Size the bearing plate so that the bending stress in the plate does not exceed 0.75 times the yield strength of the steel at the tieback design load or 1.00 times the yield strength of the steel at the maximum tieback test load.

Provide polyvinyl chloride (PVC) trumpets made from Type I, Schedule 40, Grade PVC 1120 pipe conforming to the requirements of ASTM D-1785. The plastic material shall be resistant to aging by ultra-violet light.

Provide steel trumpets made from pipe or tube conforming to the requirements of ASTM A-53 for pipe and ASTM A-500 for tubing.

Provide trumpets with an inside diameter equal to or larger than the hole in the bearing plate furnished by the tendon supplier, and long enough to accommodate movements of the structure during testing and stressing. For strand tendons, consult

the tendon supplier to determine the minimum length trumpet required to make a transition from the diameter of the tendon in the unbonded length to the diameter of

the tendon at the anchorhead. Provide a watertight seal between the trumpet and the unbonded length corrosion protection.

If grout is used to fill the trumpet, then the seal is temporary and it acts as a grout form. If corrosion inhibitor is used to fill the trumpet, then the seal is permanent and it shall be fabricated from Buna-N-synthetic rubber or equal.

Furnish anchor nuts and plates for bars having complementary spherical shapes at the contact areas.

Furnish anchorheads of either steel meeting the requirements of AASHTO M270 Grade 250, or cast ductile iron meeting the requirements of ASTM A-536 Grade 80-55-06.

D. Use corrosion inhibitor (grease) conforming to the following test requirements:

Chlorides	10 ppm max.	by ASTM B-512
Nitrates	10 ppm max.	by ASTM D-992
Sulfides	10 ppm max.	by APHA 427D(15th ED)

The corrosion inhibitor (grease) must remain ductile and free from cracks and must not become fluid over the anticipated range of temperatures encountered during fabrication, transport, storage and while in service. The inhibitor must be impervious to moisture and air, be a self-healing film and displace water. The corrosion inhibitor must have a reserve alkalinity for long-term acid neutralization.

E. Epoxy Coating: Epoxy coating must be an electrostatically applied coating meeting M-284 (ASTM A-775). Any required field patching must meet ASTM A-775 or ASTM D-3196.

F. Corrugated Tubes: The following corrugated tubes will be acceptable:

1. High density corrugated polyethylene (PE) tubing conforming to the requirements of AASHTO M252-851.

2. High density corrugated polypropylene (PP) tubing manufactured from plastic classified as Type II-26500-D by ASTM D-2146. The minimum wall thickness of the tubing shall be 0.04 inches (1.0 mm).

3. Corrugated polyvinyl chloride (PVC) tubes with a minimum wall thickness of 0.04 inches (1.0 mm).

G. Heat Shrinkable Tube: Heat shrinkable tubing must have an outer heat shrinkable polyethylene plastic internally coated with a thixotropic sealant. Recovered wall thickness must be at least 0.04 inches (1.0 mm). Coating thickness must be at least 0.02 inches (0.50 mm).

H. Bondbreaker: Use any of the following bondbreakers:

1. Bar Tieback Tendon: Low density polyethylene tubing, polypropylene tubing or polyvinyl chloride tubing with a minimum wall thickness of 0.06 inches (1.50 mm).
1. Strand Tieback Tendon: A polyethylene tube or a hot melt extruded polypropylene tube with a minimum wall thickness of 0.06 inches (1.50 mm).

I. Electrical Insulation: The electrical insulation must be a multipolymer plastic sheet manufactured expressly for bearing purposes. Fabricate the electrical insulation from a material that is: an electrical insulator; resistant to attack from cement; the corrosion inhibitor, or the environment; nondetrimental to the prestressing steel; prevents oxygen and moisture from coming in contact with the anchorage or bearing plate; and is capable of withstanding atmospheric exposure and ultra-violet light degradation if the anchorhead is to remain exposed to the atmosphere.

J. Steel members used as soldier piles must conform to the applicable sections of the Standard Specifications. Steel piles must be ASTM Grade A36 or better.

K. Concrete and reinforcing steel must conform to the applicable sections of the Standard Specifications. **Reinforcing steel must be epoxy coated.**

L. Concrete for coping must be Class A and conform to the applicable requirements in sections 420 and 1000 of the Standard Specifications. Reinforcing Steel in coping must conform to the applicable requirements in sections 425 and 1070 of the Standard Specifications.

M. Filter fabric on the backside of the wall, used in conjunction with a granular material or with a molded, polymeric core must conform to Section 1056-1 of the Standard Specifications.

N. Drain pipes installed along the lower portions of the wall near the leveling pad or footing must conform to Section 815 of the Standard Specifications.

O. Timber lagging must conform to the requirements of Section 1082-1 of the Standard Specifications and Table 16 entitled Recommended Thickness of Wood Lagging in Appendix C of the AASTHO "Construction Handbook for Bridge Temporary Works" or page 82 of FHWA Ground Anchors Manual.

P. Class VI Select Material (#57 Stone) must conform to the requirements of Section 1005 and Section 1016 of the Standard Specifications.

4.0 Corrosion Protection:

A. General:

Prestressed anchors and the anchor head assembly must be doubly protected against corrosion. The cement grout in the bond zone constitutes one protection system; cement grout in the unbonded zone does not constitute a protection system. Corrosion protection begins with the storage, fabrication, and handling of the tendon components prior to insertion in the borehole. Proper care is required to avoid prolonged exposure to the elements, and to avoid mechanical or physical damage which would reduce or impair the future ability of the components to resist any adverse conditions encountered during their service life.

B. Tendon Fabrication:

Fabricate tendons in accordance with approved details and free of dirt, detrimental rust, or other deleterious substances. Install the plastic sheath at the fabrication shop as a single piece without splices. Field installation of the plastic sheath shall not be allowed. Prior to installation, handle and store tendons in such a manner as to avoid corrosion and physical damage. Field repair damaged coatings with ultra-high molecular weight polyethylene tape or heat shrinkable tubing. Damage such as abrasions, cuts, nicks, welds, weld splatters, or heavy corrosion and pitting, will be cause for rejection of the tendon. Replace rejected tendons at no cost to the Department in terms of either material replacements and/or resulting time delays.

1. Strand Tendon:

Apply a polyethylene tube or a hot-melt extruded polypropylene tube over a corrosion inhibiting grease coated strand for the entire unbonded length of each individual strand of the tieback tendon. Coat the individual wires of each tendon with grease to completely fill the space between the tube and the strand, making provisions to prevent the grease from escaping at the ends of

the tubes. Place the bond length and lower two feet of the unbonded length in a corrugated tube. Centralize the tendon within the corrugated tube with a minimum of 0.02 inches (0.50 mm) of grout cover. Use spacers along the bond length to separate the strands so the tendon will bond to the encapsulation grout. Mix with the encapsulation grout, if desired, admixtures which control bleed water, improve flowability, reduce water content and are expansive. Three options for grouting inside the encapsulation are available:

a. Grout the tendons inside the encapsulation after the tendon has been placed in the drill hole, or

b. Grout the tendons inside the encapsulation prior to inserting the tendon in the drill hole and then place in the drill hole provided the grout has not achieved initial set or a maximum of 45 minutes, or

c. Grout the tendons and allow to set inside the encapsulation for a period of 24 hours prior to inserting the tendon in the drill hole. In this case, support the entire length of tendon at sufficient intervals during installation such that excessive bending does not occur.

2. Bar Tendon:

Epoxy coat the bar tendon with a minimum thickness of 0.008 inches (0.20 mm). Install a tight fitting bondbreaker around the encapsulated bar over the unbonded length.

5.0 Construction:

A. Excavation and Backfill:

Coordinate scheduling with the Wall Subcontractor such that earthwork and wall construction can be accomplished at a minimum of delay to each.

Excavation must be in reasonably close conformity to the limits and construction stages shown on the plans or specified in the contract and limited to that necessary to install the lagging.

B. Temporary Earth Support:

Construct temporary earth support between soldier piles such as to be safe and provide adequate resistance to earth loads. Use sound materials, free of defects, and placed in a workmanlike manner.

Fill small voids behind the lagging with hand tamped on site soils.

C. Soldier Piles:

Set all soldier piles in pre-augered or drilled holes. Keep holes open, if required, by casing or other means approved by the Engineer. Place concrete such that free fall greater 5 feet (1.5 meters) does not occur. Use a lean sand grout mixture to fill the remainder of the hole to the ground surface. Remove this mixture as required to install

the timber lagging. Set piles and concrete holes as soon as practical after drilling. At no time shall more than 5 holes be left open before setting piles and concreting.

Shaft excavation must conform to the applicable provisions of Section 410 of the Standard Specifications. Haul off and waste material resulting from shaft excavation. Do not place shaft excavation on the slope. Provide Class A concrete meeting the requirements of Section 1000 of the Standard Specifications or as approved by the Engineer. Design the Class "A" concrete with a 6-inch to 8-inch slump.

Cast shaft concrete against undisturbed ground unless otherwise permitted by the Engineer, and construct in accordance with Section 825 of the Standard Specifications. If over-excavation occurs vertically, backfill with #57 Stone Backfill before setting the pile. Remove all loose and soft material and dewater the excavation immediately

before and during the concrete casting operation. Make the top of the concrete shafts generally level.

D. Anchor Installation:

The holes for the anchors must be drilled. Core drilling, rotary drilling, auger drilling or percussion drilling may be used. If water is used in the drilling operation, dispose of the water in such a manner that erosion of the wall site is minimized. *Any damage to the site by water erosion shall be repaired by the Contractor at no cost to the Department.* If the hole will not stand open, install casing as required to maintain a clean and open hole. Provide a hole diameter not less than 3 inches (75 mm) if no pressure grouting is used. Pressure grouting is defined as grouting with a pressure greater than 60 psi (415 kPa). Use a drill bit with a diameter not less than 0.12 inches (3 mm) smaller than the specified hole diameter. The hole shall be within 3 inches (75 mm) of plan location and drilled to the inclination specified on the approved design plans within a three degree tolerance. Do not extend holes outside the right-of-way limits. Thoroughly clean holes in rock of all dust, rock chips, grease or other deleterious material prior to inserting the tendon.

Install the tendon in the casing or hole drilled for the anchor, taking care to insure that the tendon's corrosion protection is not damaged during handling or installation. If the sheathing has been damaged, repair it with ultra high molecular weight PE tape. Wind the tape spirally around the tendon so as to completely seal the damaged area. Use a pitch of the spiral to ensure a double thickness at all points. Install the tendon in the bond length in such a way as to insure that it has a minimum of 0.5 inch (13 mm) grout
cover. Degrease the bond length of strands or wires prior to installation by using Acetone, MEK, or MIBK leaving no residue on the tendon. Other substances may be used subject to approval by the Engineer. Include all costs of cleaning tendons in the price bid for Contract items.

Drill holes 1 foot (0.3 meter) minimum longer than tendons. Insert the tendon after the hole is drilled to the final depth. Do not subject anchor tendons to sharp bends. Provide centralizers at maximum 10 foot (3.0 meters) center-to-center spacing throughout the bond length to insure that the tendons do not contact the wall of the drill hole, with the lowest centralizer no more than 5 feet (1.5 meters) from the bottom of the bond length. Do not use centralizers made of wood or any other material detrimental to the tendon steel or sheathing. If multi-element tendons are used without a fixed anchorage at the lower end, provide adequate spacing of the tendon elements to achieve proper grout coverage. Do not use anchors for grounding electric equipment.

Perform the grouting operation after the tendon is inserted. Inject grout at the lowest point of the anchor. Place grout over the entire anchor length. Do not allow the top of the grout column to contact the wall or the trumpet. After grouting, the tendon shall remain undisturbed until the grout has cured for at least 72 hours. Record the following data during the grouting operation:

a. Type of mixer
b. Water/cement ratio
c. Type of additives
d. Grout pressure
e. Type cement
f. Test sample strengths (prior to stressing)
g. Volume of grout placed in bond and free lengths

After lockoff of the post-tension force, fill the trumpet with non-bleed, expansive grout, or grease. Coat the exposed surface of the anchorage with mastic, and cover with a metal cap or Portland Cement concrete.

E. Anchor Testing and Stressing:

Each anchor must be tested. The maximum test load must not exceed 80% of the guaranteed ultimate tensile strength of the tendon. Conduct performance tests for the first two anchors installed for each specified design load capacity and 5% of the remaining anchors at locations to be chosen by the Engineer. Proof test all remaining anchors. Install no additional anchors until the first two anchors have been successfully performance tested.

Anchors extending through #57 stone fill must not be fully tensioned until fill is placed to the full height of the wall. Anchors may be partially tensioned only once fill has been placed to the same level as the anchors. The partial tension load must not cause the soldier piles to move out of alignment tolerances.

1. Performance Tests:

Do performance tests by incrementally loading and unloading the anchor in accordance with the following schedule. Record the movement of the tendon to the nearest 0.001 inch (0.025 mm) with respect to an independent fixed reference point. The jack and pressure gauge shall have been calibrated as a unit. Use a pressure gauge graduated in 100 psi (700 kPa) increments or less. Use a master gauge to verify the accuracy of the production gauge at the beginning of each shift.

Cycle	Load	Cycle	Load
1	0		0.50P
	0.25P		0.75P
	AL		1.00P
2	0.25P		1.20P
	0.50P		1.33P
	0.25P		1.20P
	AL		1.33P*
3	0.50P	Adjust to lockoff load.	
	0.75P	Actual lock-off loads may be	
	0.50P	somewhat higher to account	
	AL	for seating losses.	

		* Hold 50 minutes for creep test.
4	0.50P	
	0.75P	
	1.00P	AL (Alignment Load)
	0.75P	P (Design Load)
	0.50P	
	AL	

To prevent misalignment of testing equipment, maintain a minimum Alignment Load (AL) of 0.05P.

Hold each load increment until movement ceases, or a minimum of 1 minute. Submit loading and unloading rates (tons per minute) for approval. Apply each load in less than 30 seconds after the jack pump is started.

Perform a Creep Test by holding the 1.33P load for 50 minutes. While maintaining a constant load, record anchor movement (total movement) at 0, 1/2,

1, 3, 5, 10, 20, 30, 40 and 50 minutes. Begin the observation time when load is applied to the pump.

The Engineer will review all performance tests to determine if the anchor is acceptable. An anchor shall be acceptable if:

1) The total elastic movement obtained exceeds 80% of the theoretical elastic elongation of the free length.

2) The creep movement does not exceed 0.08 inches (2 mm) during the 5 minutes to 50 minutes time increments regardless of tendon length and load.

2. Proof Tests:

Perform proof tests by incrementally loading and unloading the anchor in accordance with the following schedule. Record the movement of the tendon to the nearest 0.001 inch (0.025 mm) with respect to an independent fixed reference point. Monitor the jack load with a pressure gauge or load cell.

0
0.25P
0.50P
0.75P
1.00P
1.20P
1.33P (Hold for creep test)
Adjust to lockoff load.

Actual lockoff load may be somewhat higher to account for seating losses.

Perform a Creep Test by holding the 1.33P load for 5 minutes. Holding the load constant, record anchor movement (total movement) at 0 second, 30 second, 1 minute, 3 minute, and 5 minute intervals. Begin observation times the moment the jack begins to apply the 1.33P load. If the movement between the 30 second and the 5 minute reading is 0.08 inches (2 mm) or more, maintain the load for an additional 45 minutes and record the movement at 10, 20, 30, 40, and 50 minutes. Record all movements in relation to a fixed reference point. The acceptance criteria shall be as in A and B above.

3. Lift-Off Tests:

Make a lift-off reading of all anchors after transferring the load to the end anchorage and prior to removing the jack. The load determined shall be within 5% of lockoff load. If the lift-off load is not within this tolerance, reset the end

anchorage and make another lift-off reading. Perform lift-off tests within 7 days of when the load was locked-off in the anchor.

After five lift-off tests are performed, the Engineer will *specify* lift-off tests be performed on a random basis such that the total number of tests will be on no more than 10% of the remaining anchors.

4. Cutting of Tendon Protrusions:

After an anchor has been accepted by the Engineer, the portion of the anchored tendon protruding over the anchor may be cut, if not otherwise required for use in retesting. Cutting must be done according to the tendon manufacturer's recommendations as approved by the Engineer. Care must be taken not to damage the tendon anchor.

5. Redesign:

If anchors fail during performance tests or proof tests, modify the design or construction procedures, subject to review by the Engineer. These modifications may include reducing the anchor design load by increasing the number of anchors, increasing the grout pressure, requiring post-grouting or increasing the bond length. Any modification of design or construction procedure will be at no cost to the Department. Install the redesigned anchors in the wall and test as previously defined at no cost to the Department.

Those anchors that fail the performance or proof tests may be incorporated in the wall. Propose a reduced Design Load and retest as noted above. Acceptance of such anchors will be at the discretion of the Department.

6.0 Shotcreting

Furnish all materials, equipment, tools and labor required for placing and securing geocomposite drainage material, weep holes and reinforced shotcrete. If necessary, trim and clean the soil/rock surfaces and shotcrete cold joints prior to shotcreting.

Shotcrete must comply with the requirements of ACI 506R, "Specification for Shotcrete", except as otherwise specified. Shotcrete consists of an application of one or more layers of mortar or concrete conveyed through a hose and pneumatically projected at a high velocity against a prepared surface.

Shotcrete may be produced by either a dry-mix or a wet-mix process. The wet-mix process consists of thoroughly mixing all the ingredients except accelerating admixtures but including the mixing water, introducing the mixture into the delivery equipment and delivering it, by positive displacement, to the nozzle. The wet-mix shotcrete may then be air jetted from the nozzle at high velocity onto the surface. Dry-mix process is shotcrete without mixing water which is conveyed through the hose pneumatically and the mixing water is introduced at the nozzle.

A. Mix Design

No shotcrete admixture may be used without the Engineer's approval. Thoroughly mix at the rate specified by the manufacturer any admixtures used to entrain air, reduce water-cement ratio, retard or accelerate setting time or accelerate the development of strength. Accelerating additives must be compatible with the cement used, be non-corrosive to steel and not promote other detrimental effects such as cracking and excessive shrinkage. The maximum allowable chloride ion content of all ingredients may not exceed 0.10% when tested to AASHTO T260.

1. Aggregate

Provide aggregate for shotcrete that meets the strength and durability requirement of AASHTO M-80 and M-43 and the following gradation requirements:

Sieve Size	% Passing by Weight
1/2 inch (13 mm)	100
3/8 inch (10 mm)	90-100
No. 4	70-85
No. 8	50-70
No. 16	35-55
No. 30	20-35
No. 50	8-20
No. 100	2-10

2. Proportioning

Proportion and deliver shotcrete with a minimum cement content of 658 pounds per cubic yard (390 kilograms per cubic meter). Aggregate cement ratio may not

be more than 4.5 by weight and water/cement ratio may not be more than 0.45. For wet-mix shotcrete the air content at delivery to the pump should be in the range of 7 to 10 percent when tested in accordance with ASTM C231.

3. Strength Requirements

   Produce a shotcrete mix capable of attaining 2000 psi (14 MPa) compressive strength in three days and 4000 psi (28 MPa) in 28 days. The average compressive strength of each set of three cores should be equal to or exceed 85 percent with no individual core less than 75 percent of the specified compressive strength.

4. Mixing and Batching

   Aggregate and cement may be batched by weight or by volume in accordance with the requirements of ASTM C91 and ASTM C685, respectively. Provide mixing equipment that is capable of thoroughly mixing the materials in sufficient quantity to maintain continuity during placement. Ready mix shotcrete must comply with AASHTO M-157. Batch, deliver and place ready mix shotcrete within 90 minutes of mixing.

B. Field Quality Control

Both preconstruction and production shotcrete test panels are required. Do not disturb test panels within the first 24 hours. Field cure the test panels under conditions similar to those anticipated for the work.

Perform field control tests in the presence of the Engineer. Provide equipment, materials and the services of one or more employees as necessary to obtain shotcrete cores for testing including construction of test panel boxes, field curing requirements and coring. The Department will perform compressive strength testing in accordance with ACI 506R. The frequency specified for test panels is approximate. The Engineer may require a greater or lesser number of panels.

Preconstruction and production test panels must be 18 x 18 inches (450 x 450 mm) and a minimum of 4 inches (100 mm) thick.

Test reports that indicate unsatisfactory compressive shotcrete properties will result in suspension of the crew responsible for the unsatisfactory specimens until they have demonstrated that they are capable of producing acceptable work or until additional specimens have been submitted, tested and proven satisfactory. Cost associated with field quality control testing including additional testing and lost production due to tests failing to meet the specifications will be borne by the Contractor.

1. Preconstruction Test Panels

   Furnish at least two preconstruction test panels for each proposed mixture being considered and for each shooting position to be encountered on the job, made by

each application crew. Preconstruction test panels must be made by each application crew using the equipment, materials, mixture proportions and procedures proposed for the job prior to the commencement of work.

Preconstruction test panels for plain shotcrete must be in accordance with ACI 506.2 and the following:

a. Provide one preconstruction test panel with the maximum shotcrete thickness and the maximum anticipated reinforcing congestion. Cores extracted from the test panel must demonstrate adequate cover of the reinforcement and must be equal to core grade two or better in accordance with ACI 506.2.

b. Provide one preconstruction test panel at least 4 inches (100 mm) thick without reinforcement for compressive strength testing.

c. Slope the sides of the test panels at 45 degrees.

2. Production Test Panels

Furnish at least one production test panel or, in lieu of production test panels, six 3 inch (75 mm) diameter cores from the shotcrete face for every 5000 square feet (460 square meters) or 50 cubic yards (38 cubic meters) of shotcrete placed, whichever is less. Construct the production test panels simultaneously with the shotcrete facing installation at times designated by the Engineer.

3. Core Testing

Cut at least six core samples from each pre-construction test panel and production test panel at the frequency specified herein. Soak cores in water for at least 40 hours in accordance with AASHTO T24. Cores should be at least 3 inches (75 mm) in diameter and have a minimum length to diameter ratio of one. When the length of a core is less than twice the diameter, apply correction factors given in ASTM C42 to obtain the compressive strength of individual cores. Test three cores at 3-days and three more cores at 28-days for compressive strength testing.

Fill core holes in the wall with patching mortar or shotcrete after cleaning and thoroughly dampening.

4. Visual Observation

A clearly defined pattern of continuous horizontal or vertical ridges or depressions at the reinforcing elements after they are covered will be considered an indication of insufficient cover of reinforcement or poor application and probable voids. In this case the application of shotcrete will be immediately suspended and the work carefully inspected by the Engineer. Implement and complete corrective measures prior to resuming the shotcrete operations.

The shotcrete procedure may be corrected by adjusting the nozzle distance and orientation perpendicular to the surface, adjusting the water content of the shotcrete mix or other means acceptable to the Engineer. If necessary, broom and roughen the shotcreted surface to ensure proper bond of subsequent layers.

C. Shotcrete Alignment Control

Provide alignment wires and/or thickness control pins to establish shotcrete thickness and maintain a plain surface. The maximum distance between the wires on any surface should be equal to the vertical nail spacing. Ensure that the alignment wires are tight, true to line and placed to allow further tightening.

D. Surface Preparation

Prior to shotcreting the "birds beak" (ungrouted zone of the nail drill hole near the face), remove all loose materials from the surface of the grout and prepare the joint in accordance with all requirements for joint construction specified herein.

Remove all loose materials and loose dried shotcrete from all receiving surfaces by methods acceptable to the Engineer. Accomplish the removal in such a manner as not to loosen, crack or shatter the surfaces to receive the shotcrete. Any surface material which, in the opinion of the Engineer, is so loosened or damaged must be removed to a sufficient depth to provide a base that is suitable to receive shotcrete. Remove material that loosens as the shotcrete is applied. Do not place shotcrete on frozen surfaces.

E. Delivery and Application

Maintain a clean, dry, oil-free supply of compressed air sufficient for providing adequate nozzle velocity for all parts of the work at all times. Use equipment that is capable of delivering the premixed material accurately, uniformly and continuously through the delivery hose. Control thicknesses, methods of support, air pressure and rate of placement of shotcrete to prevent sagging or sloughing of freshly-applied shotcrete.

Apply the shotcrete from the lower part of the area upwards to prevent accumulation of rebound on uncovered surfaces. Where shotcrete is used to complete the "birds beak" (ungrouted zone of the nail drill hole near the face), the nozzle must be positioned into the mouth of the drill hole to completely fill the void. Do not use or salvage rebound shotcrete. Remove rebound which does not fall clear of the working area. Hold the nozzle at a distance and an angle approximately perpendicular to the working face so that rebound will be minimal and compaction will be maximized. Rotate the nozzle steadily in a small circular pattern.

F. Defective Shotcrete

Repair surface defects as soon as possible after initial placement of the shotcrete. Remove all shotcrete which lacks uniformity, exhibits segregation, honeycombing or

lamination or contains any voids or sand pockets and replace with fresh shotcrete to the satisfaction of the Engineer.

G. Construction Joints

Uniformly taper construction joints toward the excavation face over a minimum distance equal to the thickness of the shotcrete layer. Clean and prepare the surface of the nail grout at the face of the wall to receive shotcrete in a manner equal to all other construction joints.

H. Finish

Shotcrete must have a screed finish.

I. Climate

Do not place shotcrete in cold weather when the ambient temperature is below 40°F (4.5°C) and the shotcrete is likely to be subjected to freezing temperatures before gaining sufficient strength to avoid damage unless cold weather protection is in place. Maintain cold weather protection until the strength of the in-place shotcrete is greater then 750 psi (5.2 MPa). **Cold weather protection must be heated enclosures, or other means acceptable to the Engineer.** Heated enclosures must comply with the requirements of ACI 306R, "Cold Weather Concreting". Materials may be heated in order that the temperature of the shotcrete, when deposited, is not less than 50°F (10°C) or more than 90°F (32°C). Placement of shotcrete and concrete during cold weather must be in accordance with ACI 306R, "Cold Weather Concreting".

Suspend shotcrete application during high winds and heavy rains when in the opinion of the Engineer the quality of the application is not acceptable. Remove and replace shotcrete that is exposed to rain and washes out cement or otherwise makes the shotcrete unacceptable to the Engineer. Provide polyethylene sheeting or equivalent when adverse exposure to weathering is anticipated. Secure polyethylene film to the top and bottom of the excavation.

7.0 Records

Provide the Engineer with the following records:

1. As-built drawings showing the location of the tiebacks, total tieback length, anchor length, and unbonded length one month after completion of the tieback installation.

2. Steel and grout certifications and mill reports prior to incorporating these materials in the work.

3. Grouting records indicating the cement type, quantity injected, and the grout pressures twice a week.

4. Tieback test results twice a week.

8.0 Method of Measurement

A. Permanent Anchor Tieback Retaining Wall - The quantity of Permanent Anchor Tieback Retaining Wall to be paid for will be the actual final square feet (square meters) of exposed retaining wall face. Measurement will be made vertically from the finished grade at the bottom of the wall to the bottom of the concrete coping.

B. Class VI Select Material (#57 Stone) - The quantity of Class VI Select Material to be paid for will be the actual number of tons (metric tons) of this material which has been placed as backfill behind the wall within the limits as shown on the plans and as directed by the Engineer.

C. Grout for Tiebacks and Soldier Beams - The quantity of Grout for Tiebacks and Soldier Beams to be paid for will be the actual number of cubic yards (cubic meters) of this material which has been placed as shown on the plans and as directed by the Engineer.

9.0 Basis of Payment

A. Permanent Anchor Tieback Retaining Wall

Payment will include all costs for concrete, reinforcing steel, shaft excavation, lagging, piles, anchors, placing and finishing shotcrete, cold weather protection, labor, design and all other materials and equipment including but not limited to drilling holes, post-tensioning, performing and evaluating all tests, submitting records of tests, all tools and all other miscellaneous items necessary to complete the work, including concrete coping and drainage above and below wall, with the exception of the items noted below.

Excavation of the material in front of the retaining wall will be paid for as "Unclassified Excavation" in accordance with Section 225 of the Standard Specifications.

Payment will be made under:

"Permanent Anchor Tieback Wall At Slide #2,
Sta 17+00.00 to Sta 22+25.00 .....Square Feet (Square Meter)

"Permanent Anchor Tieback Wall At Slide #1,
Sta 33+00.00 to Sta 35+00.00 .....Square Feet (Square Meter)

B. Class VI Select Material (#57 Stone)

The quantity of Class VI Select Material (#57 Stone), measured as provided above will be paid for at the contract unit price per ton (metric ton) for "Class VI

Select Material for Permanent Anchored Wall". Such price and payment will be considered full compensation for furnishing, hauling, excavating into existing ground, and compacting the backfill material necessary to complete the work satisfactorily.

Payment will be made under:

"Class VI Select Material for Wall At Slide #2
Sta 17+00.00 to Sta 22+25.00".....Tons (Metric Tons)

C. Grout for Tiebacks and Soldier Beams

The quantity of Grout for Tiebacks and Soldier Beams, measured as provided above will be paid for at the contract unit price per cubic yard (cubic meter) for "Grout for Tiebacks and Soldier Beams". Such price and payment will be considered full compensation for furnishing, mixing, placing submitting records of tests, all tools and all other miscellaneous items necessary to complete the work

Payment will be made under:

"Grout for Tiebacks and Soldier Beams at Wall At Slide #2,
Sta 17+00.00 to Sta 22+25.00 ".....Cubic Yard (Cubic Meter)

" Grout for Tiebacks and Soldier Beams at Wall At Slide #1,
Sta 33+00.00 to Sta 35+00.00".....Cubic Yard (Cubic Meter)

TEMPORARY SOIL NAIL WALLS 10-21-04

General

The work under this section consists of design, plan preparation and construction of temporary soil nail walls in accordance with these specifications.

Temporary soil nailing consists of excavating in lifts, drilling holes into the ground, placing and grouting the nail tendons in the holes, placing geocomposite drain strips and installing weep holes, applying shotcrete facing and installing the nail head anchorage assembly.

The term "Soil Nail" as used in this special provision is intended as a generic term and refers to a reinforcing bar grouted into a drilled hole installed in any type of ground including soil, weathered rock and hard rock.

The Contractor is advised to review all available subsurface information and conduct additional investigations, as needed, to determine subsurface conditions such as high groundwater, unstable soil, hard rock, etc. that would adversely affect the cost of construction.

Submit 8 copies of plans and calculations to the Engineer for review and approval and allow 5 calendar days from the date they are received until the Engineer returns them.

A pre-construction meeting is required prior to the start of the work and will be attended by representatives of the Contractor, Wall Subcontractor, Resident Engineer and the Geotechnical Engineering Unit. Soil nailing requires organized coordination of each of these parties. Conduct the pre-construction meeting to clarify the construction requirements, provide appropriate scheduling of the construction activities and identify contractual relationships and responsibilities. Review of all submittals should be complete prior to scheduling the pre-construction meeting.

Design Criteria and Plan Requirements

Use the following soil parameters to design the temporary soil nail wall in the absence of any soil parameter information on the plans or laboratory testing on samples collected from the shoring location.

Roadway Embankment material:	$\phi = 34°$
	$c = 0$ psf
	$\gamma = 130$ pcf

The Contractor may elect to perform soil testing to determine soil parameters at the shoring location. Submit the proposed soil parameters to the Engineer for approval prior to using the soil parameters for design.

Design and construct temporary soil nail walls in accordance with the Service Load Design (SLD) procedures contained in the FHWA "Manual for Design and Construction Monitoring of Soil Nail Walls", Report No. FHWA-SA-96-069 and the Soil Nailing Field Inspectors Manual, Publication No. FHWA-SA-93-068. The required partial safety factors,

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Inspectors Manual, Publication No. FHWA-SA-93-068. The required partial safety factors, allowable strength factors and minimum global stability soil factors of safety must be in accordance with the FHWA manual, unless specified otherwise. Estimated soil/rock design shear strength parameters, slope and external surcharge loads, type of wall facing and facing architectural requirements, known utility locations, easements and right-of-ways will be as shown on the "Layout Drawings" or specified herein. Structural design of any individual wall elements not covered in the FHWA manual will be by the service load design methods in conformance with Article 3.22 and other appropriate articles of the latest Edition of the AASHTO Standard Specifications for Highway Bridges including current interim specifications.

Shotcrete facing is required and must be a minimum of 4 inches (100 mm) in thickness and reinforced with welded wire and #4 (#13) bars running horizontally above and below the nails and behind the bearing plates.

Geocomposite drainage mats at minimum 10 foot (3 m) centers are required.

A minimum nail inclination of 12 degrees is required. The nail holes must be a minimum of 6 inches (150 mm) and a maximum of 10 inches (250 mm) in diameter with a minimum center to center spacing of 3 feet (1 meter). A minimum clearance from end of soil nail to bottom of nail hole of 6 inches (150 mm) is required.

Do not extend nails beyond the Right of Way or easement line.

The submitted plans should include but will not be limited to the following:

- Elevation views showing all nail locations, proposed ground line elevations and stations and construction joint locations.
- Plan views.
- Section views showing shotcrete reinforcement, vertical nail locations, nail inclinations, drainage details, etc.
- Details of nail head anchorage assemblies, nail holes, drainage mats, etc.
- Verification test nail locations and required design adhesion values.
- Construction sequence.

A professional engineer registered in the state of North Carolina must seal all plans and calculations.

Quality Assurance

The Contractor's superintendent must have a minimum of three years experience and the drill operators and on-site supervisors must have a minimum of one year experience installing soil nails or ground anchors. Prior to starting the work, submit a list identifying the superintendent, drill rig operators and on-site supervisors assigned to the project.
All nozzlemen are required to have at least one year of continuous experience in similar shotcrete application work and must demonstrate ability to satisfactorily place the material in accordance with the recommendations of ACI 506.3R Guide to Certification of Shotcrete

Nozzlemen. Evidence that the proposed nozzelman have been certified to the requirements of ACI 506.3R within the last five years is required.

Construction Submittals

Provide the following submittals for the Engineer's review and approval. Changes or deviations from the approved submittals must be re-submitted for approval by the Engineer. The Contractor will not be allowed to begin wall construction until all submittal requirements are satisfied and found acceptable to the Engineer. No adjustments in contract time will be allowed due to incomplete submittals. Items listed below that have been included on the contractor prepared plans need not be resubmitted.

At least 5 days prior to initiating the work, submit to the Engineer:

1. Proposed schedule and detailed construction sequences.

2. Methods of excavation to the staged lifts indicated in the plans and excavation equipment types.

3. Drilling methods and equipment.

4. Nail grout mix design including:
   - Brand and type of Portland cement.
   - Source, gradation and quality of all aggregates.
   - Proportions of mix by weight.
   - Compressive strength test results (per AASHTO T106) verifying the required minimum seven day grout compressive strengths or previous test results completed within one year of the start of the work may be submitted for verification of the required compressive strength.

5. Nail grout placement procedures and equipment.

6. Soil nail testing methods and equipment including:
   - Details of the jacking frame and appurtenant bracing.
   - Details showing methods of isolating test nails during shotcrete application (i.e., methods to prevent bonding of the soil nail bar and the shotcrete).
   - Details showing methods of grouting the unbounded length of test nails after completion of testing.
   - Equipment list.

7. Identification number and certified calibration records for each load cell, test jack pressure gauge and jack master pressure gauge to be used. Calibration records must include the date tested, device identification number and the calibration test results and be certified for an accuracy of at least two percent of the applied certification loads by a qualified independent testing laboratory within 30 days prior to submittal.

8. Certified mill test results for nail bars together with properly marked samples from each heat specifying the ultimate strength, yield strength, elongation and composition.

9. Certifications of compliance for bearing plates and nuts.

10. A detailed construction dewatering plan addressing all elements necessary to divert, control and dispose of surface water.

11. Certified shotcrete mix designs including:
    - Brand and type of Portland cement used.
    - Source, gradation and quality of aggregates as specified herein.
    - Proportions of mix by weight.
    - Proposed admixture, manufacturer, dosage, technical literature if allowed.
    - Compressive strength test results verifying the 3-day and 28-day compressive strengths.

12. Certified mill tests for all reinforcing steel together with properly marked samples from each heat specifying the minimum ultimate strength, yield strength, elongation and composition.

13. Complete engineering data for the drainage geotextile and geocomposite drain strip including a 1 ft (300 mm) square sample, manufacturers' certificate of compliance and installation instructions.

14. Certifications of Compliance for weep hole drainage pipes and curing compounds (if used).

15. Specification and data for review on equipment proposed for the project including shotcreting and compressed air equipment, proposed access arrangements and capacities.

16.

Materials

All materials must conform to the requirements of the applicable sections of the Standard Specifications for Roads and Bridges of the North Carolina Department of Transportation and the following provisions:

Centralizers PVC pipe or tube, steel or other material not detrimental to the nail steel (wood cannot be used); securely attached to the nail bar; sized to position the nail bar within 1 inch (25 mm) of the center of the drill hole; sized to allow tremie pipe insertion to the bottom of the drill hole; and sized to allow grout to freely flow up the drill hole.

Nail Grout	Neat grout is to be used with a minimum seven day compressive strength of 3000 psi (21 MPa) per AASHTO T106 and a minimum cement of nine sacks per cubic yard.
Cement	Portland Cement conforming to AASHTO M85 Type I, II or III.
Fine Aggregate	Clean, natural sand, AASHTO M6. Artificial or manufactured sand will not be accepted.
Coarse Aggregate	AASHTO M-80, Class B for quality.
Water	Potable, clean and free from substances deleterious to concrete and steel or elements that would cause staining.
Chemical Admixtures	ASTM C1141 and the following:
Accelerator	Fluid type, applied at nozzle, meeting requirements of ASTM D98, C494 Types C or E and C266.
Water-reducer and Superplastisizer	AASHTO M-194, Type A, D, F or G.
Air-Entraining Agent	AASHTO M-194.
Plasticizers	AASHTO M-194, Type A, D, F or G.
Mineral Admixtures:	
Fly Ash	AASHTO M-295, Type F or C.
Silica Fume	ASTM C1240, 90 percent minimum silicon dioxide solids content, not to exceed 12 percent by weight of cement.
Reinforcing Bars	AASHTO M-31, Grade 60 or 75 (420 or 520), deformed. See Section 1070 of the Standard Specifications .
Welded Wire	AASHTO M55/ASTM A185 or A497.
Curing Compounds	AASHTO M-148, Type ID of Type 2.
Excavation Protection	AASHTO M-171 or Polyethylene film.
Nail Tendons	AASHTO M31, Grade 60 or 75 (420 or 520) (or Grade 150, 1035 for testing only), deformed or hollow core self drilling bars. All bars must be new, straight and undamaged.

Bearing Plates	AASHTO M183 steel plates bearing plates must be furnished by the nail bar manufacturer.
Nuts	AASHTO M291, Grade B, hexagonal fitted with beveled washer or spherical seat to provide uniform bearing. Nuts must be furnished by the nail bar manufacture.
Washer	AASHTO M291 steel.
Joint Filler & Sealant	Section 1028 of the Standard Specifications.
Geocomposite Drain	Miradrain 6200 or Equal.
Weep Hole	ASTM 1785 Schedule 40 PVC, solid and perforated wall.
Drainage Pipe	Cell classification 12454-B or 12354-C, wall thickness SDR 35, with solvent weld or elastomeric gasket joints.
Fittings	ASTM D3034, cell classification 12454-B or 12454-C, wall thickness SDR 35, with solvent weld or elastomeric gasket joints.

Handling and Storage

Carefully handle and store all steel reinforcement items and nail steel on supports to prevent contact with the ground. Damage to the nail steel as a result of abrasion, cuts or nicks, welds and weld spatter will be cause for rejection. Grounding of welding leads to the nail steel will not be allowed. Protect nail steel from dirt, rust and other deleterious substances at all times. Corrosion or pitting of the nails will be cause for rejection.

Provide drainage geotextile and geocomposite drains in rolls wrapped with a protective covering and store in a manner that protects the fabric from mud, dust, dirt, debris and shotcrete rebound. Do not remove protective wrapping until the geotextile or drain strip is installed. Avoid extended exposure to ultra-violet light. Label each roll of geotextile or drain strip in the shipment to identify that production run.

Adequately store cement to prevent moisture degradation and partial hydration. Do not use cement that is caked or lumpy.

Dewatering and Damage Control

Localized areas of perched water may be encountered at the interface of geologic units. Contact the Engineer if groundwater problems persist at the excavation face.

Provide all labor, equipment and materials required to maintain the work area in a sufficiently dry condition such that adverse water related effects do not occur during the construction period. Provide positive control and discharge of all surface water and perched ground water, if encountered, to the extent necessary to prevent adverse conditions as determined by the Engineer.

Damage caused by failure of the construction dewatering and drainage control plan to existing structures, soils or structures included in the work will be repaired by the Contractor to the Engineer's satisfaction at no additional cost to the Department.

The Contractor will be responsible for the condition of any pipe or conduit which may be used for temporary construction dewatering and all such pipes or conduits must be maintained clean and free of sediment during construction. Upon substantial completion of the work, remove construction dewatering conduits from the site. Alternatively, construction dewatering conduits can be fully grouted (abandoned) or left in a manner that protects the structure and all adjacent facilities from migration of fines through the conduit and potential ground loss.

All dewatering and drainage control costs will be considered incidental to the cost of the temporary soil nail wall.

Excavation

Mass Grading

Overexcavating the original ground beyond the final wall face will not be allowed. In the event that overexcavation beyond the final wall face occurs as a result of the Contractor's operations, restore such overexcavation using a method approved by the Engineer and at no additional cost to the Department.

Wall Face Excavation

Excavate from the top down in a staged horizontal lift sequence as shown in the plans. The excavated surface ("neat line") must be within 6 inches (150 mm) of the location shown on the approved submittals. Do not excavate the ground level in front of the wall face more than 3 feet (1 m) below the level of the row of nails to be installed in that lift. Do not excavate a lift until nail installation, reinforced shotcrete placement and nail testing for the preceding lift are complete and acceptable to the Engineer. Prior to advancing the excavation, allow shotcrete and nail grout on the preceding lift to cure for a minimum one day and three days, respectively. After a lift is excavated, clean the cut surface of all loose materials, mud, rebound and other foreign material that could prevent or reduce shotcrete bond.

Take all necessary measures to ensure that installed nails are not damaged during excavation. Repair or replace to the satisfaction of the Engineer and at no cost to the Department nails that are damaged or disturbed during excavation. Remove hardened nail grout protruding from the final wall excavation more than 2 inches (50 mm) in a manner that prevents fracturing the grout at the nail head. Sledge hammer removal of the grout is not allowed. The use of hand held rock chippers is acceptable provided their use does not damage or disturb the remaining grout at the nail head, the nail bar or the surrounding exposed ground.

Complete the excavation to the final wall face ("neat line") and application of the shotcrete in the same work shift unless otherwise approved by the Engineer. Extensions of the excavation face exposure period must be approved by the engineer. The Contractor must

demonstrate for each material type at his own expense that the unsupported final excavation face will be stable over the proposed extension of the exposure period. Extensions to the face exposure period will be periodically reviewed and may be revoked by the Engineer at his discretion. Risk of damage to existing structures or structures included in this work will be borne by the Contractor where approval for extended face exposure period is granted by the Engineer. Where extension of the face exposure period is allowed, provide and install polyethylene sheets (properly anchored to the top and bottom of the excavation) to reduce degradation of the cut face caused by changes in soil moisture, unless otherwise approved by the Engineer.

Wall Discontinuities

Where the Contractor's excavation and installation methods result in a discontinuous wall along any continuous nail row, the ends of the wall at the points of discontinuity must be constructed to prevent sloughing or failure of the temporary slopes. Submit a plan for wall discontinuity construction sequencing and shoring to the Engineer for review and approval at least 30 days prior to starting work on the affected wall sections.

Protrusions and Voids

Remove all cobbles, boulders, rubble or debris which are encountered at the soil face during excavation and which protrude from the soil face more than 2 inches (50 mm) into the design shotcrete thickness shown on the plans. Backfill any overexcavations with shotcrete. Any shotcrete used to fill voids created by the removal of cobbles and boulders or other obstructions will be considered incidental to the shotcrete wall facing and no additional payment will be made. Generally, rocky ground such as colluvium, hard rock, fill with boulders and weathered rock will be difficult to excavate on a neat line without leaving pockets and voids. The Contractor is recommended to evaluate the subsurface conditions in order to anticipate the total volume of shotcrete needed.

Excavation Face Instability

Raveling or local instability of the final wall face excavation due to the presence of groundwater, problematic soil conditions, equipment vibrations or other causes must be brought to the immediate attention of the Engineer.

Temporarily stabilize unstable areas by means of buttressing the exposed face with an earth berm or other methods acceptable to the Engineer. Suspend work in unstable areas until remedial measures submitted by the Contractor and approved by the Engineer have successfully stopped facial instability.

Timber backing or lagging behind soil nail walls that is to remain in place and if greater than 1 inch (25 mm) total thickness must be pressure treated with wood preservative for soil and fresh water use in accordance with AWPB LP-22 to a minimum retention 4 pounds per cubic foot (0.06 kilonewtons per cubic meter). Use one of the following wood preservatives: Creosote, Creosote-Coal tar solution, Penta Chlorophenol, Copper Naphthenate, ammonia copper arsenate, ammoniacal, copper zinc arsenate, acid copper chromate or chromated copper arsenate

Access

If temporary work benches are required to install the nails, locate these benches behind any traffic barriers placed for protection of existing traffic. Payment for temporary work benches including the placement and removal of fill and any temporary shoring required will be considered incidental to the cost of the temporary soil nail wall. Equipment and nails may hang over the existing lanes; however, implement lane closures in accordance with the Traffic Control Plans such that equipment and nails do not hang over or into traffic.

Installation

Classification of Materials

No classification of drilled materials will be made except for identification purposes. Nail installation will include the removal and subsequent handling of all materials encountered in drilling the holes to the required lengths.

Equipment

Use drilling equipment that can drill straight and clean holes and has the size and capability to install nails as specified herein. This will include drill rigs with the capability of nail installation and grout placement through the drill casing or hollow-stem auger where drill hole stability cannot be maintained in open holes. Provide sufficient casing/auger lengths on site to maintain uninterrupted installation of soil nails. Where hard drilling conditions such as rock, cobbles, boulders or obstructions are encountered, a down-hole, pneumatic hammer drill bit may be required to advance the nail holes.

Drilling

Drill each nail hole at the locations and to the lengths and minimum diameters indicated in the approved submittals unless otherwise approved by the Engineer. Remove cuttings from the holes using compressed air or by mechanical auger flights. Compressed air may not be used where raveling or erodible conditions cause significant disturbance or voids to develop or where facial instability is induced. Water, drilling muds or other fluids used to assist in cutting removal will not be allowed. At final penetration depth, thoroughly clean and make ready the nail hole for examination by the Engineer before nail bar installation or placement of grout. No portion of the nail hole may be left open for more than 60 minutes prior to grouting unless otherwise approved by the Engineer.

Nail Hole Support

Provide positive support of the hole during drilling as required to prevent excessive groundwater infiltration or sloughing and caving of the hole prior to nail insertion and/or grouting. Where caving and sloughing occurs, no further drilling will be allowed until the Contractor selects a method which prevents ground movement. Holes must be continuously supported by casing or alternate methods approved by the Engineer. Drilling fluids such as bentonite or water will not be allowed as a means of hole support. All installation material and other costs due to casing holes will be at no additional expense to the Department.

Provide casing made of steel construction and of ample strength to withstand handling and installation stresses, grout pressure, surrounding earth and groundwater pressures. Remove casings as the grout is placed. The casing extraction may be facilitated by the use of a vibratory extractor, if required. During removal, continually align the casing with the hole.

Optional Nail Installation Methods

Optional nail installation methods will require the approval of the Engineer. At the Contractor's option, a thin shotcrete layer may be installed prior to drilling nail holes provided that this construction sequence has been documented and approved by the Engineer. Include in the Contractor's documentation calculations demonstrating the bearing plates are adequate to service the design loads and transfer the stress to the wall by neglecting the bearing area beneath the plate encompassed by the drill hole or block out.

Production Nails

No drilling or bar placement for production nails will be allowed without prior written approval by the Engineer of the proposed drilling, installation and grouting methods. Only installation methods that have been successfully verification tested will be approved for production nail installation. Methods which fail to meet the verification and proof test acceptance criteria will be rejected. Methods that differ from those used during installation of verification nails will require additional verification nails prior to approval at no additional cost to the Department.

Provide bar sizes and grades for each nail hole as indicated in the approved submittals. Fit the bar with centralizers as shown in the plans and insert into the drill hole to the required depth without difficulty and in such a manner as to prevent damage to the drill hole. Where the bar cannot be completely inserted, remove the bar and clean or redrill the hole to permit unobstructed installation. Partially installed bars may not be driven or forced into the drill hole and will be rejected. When using open-hole drilling methods are being used, hole cleaning tools suitable for cleaning drill holes along their full length just prior to bar insertion and/or grouting are required.

Grouting

Grout the drill hole after installation of the nail bar. Grouting prior to insertion of the nail bar may be allowed provided neat grout without sand is used and the nail bar is immediately inserted through the grout to the specified design length without difficulty. Nails inserted in the grout that has taken set will be rejected and must be replaced at no additional cost to the Department. No portion of the nail hole may be left open for more than 60 minutes prior to grouting unless otherwise approved by the Engineer. Inject grout at the lowest point of each drill hole through a grouting conduit and fill the hole in one continuous operation. Gravity flow of grout into the nail hole from the excavation face will not be allowed. Cold joints in the grout placement will not be allowed, except for proof test nails. Pump the grout through a grout tremie pipe, casing, hollow-stem auger or drill rods. Maintain the conduit delivering the grout at least 5 feet (1.5 m) below the surface of the grout as the conduit is withdrawn. Withdraw the grouting conduit at a slow and even rate as the nail hole is filled in a manner that prevents the creation of voids. A sufficient quantity of grout to fill the entire nail hole must be available in delivery trucks or grout mixing/pumping plants when the first grout is placed in each nail hole. Record the quantity of grout and the grouting pressures.

If the grouting of any nail is suspended for more than 30 minutes before grouting is complete or if the quality of the grout placement results in a nail that does not satisfy any of the requirements specified herein, then remove and dispose of the steel and grout and install fresh grout and undamaged steel at no additional cost to the Department.

Grout Testing

Provide nail grout that has a minimum compressive strength of 3000 psi (21 Mpa) in seven days. Test the nail grout in accordance with AASHTO T106 at a frequency no less than every 50 cubic yards (38 cubic meters) of grout placed or once per week, which ever comes first.

Grouting Equipment

Provide grouting equipment that produces a uniformly mixed grout free of lumpy and undispersed cement. A positive displacement grout pump is required. Use a pump with a pressure gauge which can measure at least twice but no more than three times the intended grout pressure and a stroke counter (for piston-type grout pumps). Grout pumps without the specified pressure gauge and piston-type grout pumps without a stroke counter may not be used. Size the grouting equipment to be able to grout the entire nail in one continuous operation. A mixer that is capable of continuously agitating the grout during usage is required.
If self drilling or hollow core bars are used, drilling and preparing of cement grout is simultaneous. Drill bit must allow cutting through different types of soil conditions.

Attachment of Bearing Plate and Nut

Attach the bearing plate and nut as shown in the approved submittals. Seat the plate by hand wrench tightening the nut such that uniform contact with the shotcrete is achieved while the shotcrete is still plastic and prior to its initial set. Where uniform contact

between the plate and the shotcrete cannot be provided, seat the plate on a mortar pad to provide uniform support. Once the mortar pad has attained strength (minimum one day), hand tighten the nut with a wrench.

Replace bearing plates that are damaged or defective as determined by the Engineer at no additional cost to the Department.

Test Nail Unbonded Length

Isolation of the nail bar tendon for production proof test nails is required to prevent bonding of the shotcrete to the nail bar. Isolation through the shotcrete facing must be made in a manner which maintains the tolerances of reinforcing steel behind the bearing plate. Blockouts in the shotcrete that result in no reinforcing below the nail head will not be allowed. Submit details of the method of test nail isolation through the shotcrete facing and the method by which the unbonded length of production proof test nails will be maintained during testing and grouted back after testing to the Engineer for approval.

Shotcreting

Furnish all materials, equipment, tools and labor required for placing and securing geocomposite drainage material, weep holes and reinforced shotcrete. If necessary, trim and clean the soil/rock surfaces and shotcrete cold joints prior to shotcreting.

Shotcrete must comply with the requirements of ACI 506R, "Specification for Shotcrete", except as otherwise specified. Shotcrete consists of an application of one or more layers of mortar or concrete conveyed through a hose and pneumatically projected at a high velocity against a prepared surface.

Shotcrete may be produced by either a dry-mix or a wet-mix process. The wet-mix process consists of thoroughly mixing all the ingredients except accelerating admixtures but including the mixing water, introducing the mixture into the delivery equipment and delivering it, by positive displacement, to the nozzle. The wet-mix shotcrete may then be air jetted from the nozzle at high velocity onto the surface. Dry-mix process is shotcrete without mixing water which is conveyed through the hose pneumatically and the mixing water is introduced at the nozzle.

Mix Design

No shotcrete admixture may be used without the Engineer's approval. Thoroughly mix at the rate specified by the manufacturer any admixtures used to entrain air, reduce water-cement ratio, retard or accelerate setting time or accelerate the development of strength. Accelerating additives must be compatible with the cement used, be non-corrosive to steel and not promote other detrimental effects such as cracking and excessive shrinkage. The maximum allowable chloride ion content of all ingredients may not exceed 0.10% when tested to AASHTO T260.

Aggregate

Provide aggregate for shotcrete that meets the strength and durability requirement of AASHTO M-80 and M-43 and the following gradation requirements:

Sieve Size	% Passing by Weight
1/2 inch (13 mm)	100
3/8 inch (10 mm)	90-100
No. 4	70-85
No. 8	50-70
No. 16	35-55
No. 30	20-35
No. 50	8-20
No. 100	2-10

Proportioning

Proportion and deliver shotcrete with a minimum cement content of 658 pounds per cubic yard (390 kilograms per cubic meter). Aggregate cement ratio may not be more than 4.5 by weight and water/cement ratio may not be more than 0.45. For wet-mix shotcrete the air content at delivery to the pump should be in the range of 7 to 10 percent when tested in accordance with ASTM C231.

Strength Requirements

Produce a shotcrete mix capable of attaining 2000 psi (14 MPa) compressive strength in three days and 4000 psi (28 MPa) in 28 days. The average compressive strength of each set of three cores should be equal to or exceed 85 percent with no individual core less than 75 percent of the specified compressive strength.

Mixing and Batching

Aggregate and cement may be batched by weight or by volume in accordance with the requirements of ASTM C91 and ASTM C685, respectively. Provide mixing equipment that is capable of thoroughly mixing the materials in sufficient quantity to maintain continuity during placement. Ready mix shotcrete must comply with AASHTO M-157. Batch, deliver and place ready mix shotcrete within 90 minutes of mixing.

Field Quality Control

Both preconstruction and production shotcrete test panels are required. Do not disturb test panels within the first 24 hours. Field cure the test panels under conditions similar to those anticipated for the work.

Perform field control tests in the presence of the Engineer. Provide equipment, materials and the services of one or more employees as necessary to obtain shotcrete cores for testing including construction of test panel boxes, field curing requirements and coring. The Department will perform compressive strength testing in accordance with ACI 506R. The frequency specified for test panels is approximate. The Engineer may require a greater or lesser number of panels.

Preconstruction and production test panels must be 18 x 18 inches (450 x 450 mm) and a minimum of 4 inches (100 mm) thick.

Test reports that indicate unsatisfactory compressive shotcrete properties will result in suspension of the crew responsible for the unsatisfactory specimens until they have demonstrated that they are capable of producing acceptable work or until additional specimens have been submitted, tested and proven satisfactory. Cost associated with field quality control testing including additional testing and lost production due to tests failing to meet the specifications will be borne by the Contractor.

Preconstruction Test Panels

Furnish at least two preconstruction test panels for each proposed mixture being considered and for each shooting position to be encountered on the job, made by each application crew. Preconstruction test panels must be made by each application crew using the equipment, materials, mixture proportions and procedures proposed for the job prior to the commencement of work.

Preconstruction test panels for plain shotcrete must be in accordance with ACI 506.2 and the following:

a. Provide one preconstruction test panel with the maximum shotcrete thickness and the maximum anticipated reinforcing congestion. Cores extracted from the test panel must demonstrate adequate cover of the reinforcement and must be equal to core grade two or better in accordance with ACI 506.2.

b. Provide one preconstruction test panel at least 4 inches (100 mm) thick without reinforcement for compressive strength testing.

c. Slope the sides of the test panels at 45 degrees.

Production Test Panels

Furnish at least one production test panel or, in lieu of production test panels, six 3 inch (75 mm) diameter cores from the shotcrete face for every 5000 square feet (460 square meters) or 50 cubic yards (38 cubic meters) of shotcrete placed, whichever is less. Construct the production test panels simultaneously with the shotcrete facing installation at times designated by the Engineer.

Core Testing

Cut at least six core samples from each pre-construction test panel and production test panel at the frequency specified herein. Soak cores in water for at least 40 hours in accordance with AASHTO T24. Cores should be at least 3 inches (75 mm) in diameter and have a minimum length to diameter ratio of one. When the length of a core is less than twice the diameter, apply correction factors given in ASTM

C42 to obtain the compressive strength of individual cores. Test three cores at 3-days and three more cores at 28-days for compressive strength testing.

Fill core holes in the wall with patching mortar or shotcrete after cleaning and thoroughly dampening.

Visual Observation

A clearly defined pattern of continuous horizontal or vertical ridges or depressions at the reinforcing elements after they are covered will be considered an indication of insufficient cover of reinforcement or poor application and probable voids. In this case the application of shotcrete will be immediately suspended and the work carefully inspected by the Engineer. Implement and complete corrective measures prior to resuming the shotcrete operations.

The shotcrete procedure may be corrected by adjusting the nozzle distance and orientation perpendicular to the surface, adjusting the water content of the shotcrete mix or other means acceptable to the Engineer. If necessary, broom and roughen the shotcreted surface to ensure proper bond of subsequent layers.

Shotcrete Alignment Control

Provide alignment wires and/or thickness control pins to establish shotcrete thickness and maintain a plain surface. The maximum distance between the wires on any surface should be equal to the vertical nail spacing. Ensure that the alignment wires are tight, true to line and placed to allow further tightening.

Surface Preparation

Prior to shotcreting the "birds beak" (ungrouted zone of the nail drill hole near the face), remove all loose materials from the surface of the grout and prepare the joint in accordance with all requirements for joint construction specified herein.

Remove all loose materials and loose dried shotcrete from all receiving surfaces by methods acceptable to the Engineer. Accomplish the removal in such a manner as not to loosen, crack or shatter the surfaces to receive the shotcrete. Any surface material which, in the opinion of the Engineer, is so loosened or damaged must be removed to a sufficient depth to provide a base that is suitable to receive shotcrete. Remove material that loosens as the shotcrete is applied. Do not place shotcrete on frozen surfaces.

Delivery and Application

Maintain a clean, dry, oil-free supply of compressed air sufficient for providing adequate nozzle velocity for all parts of the work at all times. Use equipment that is capable of delivering the premixed material accurately, uniformly and continuously

through the delivery hose. Control thicknesses, methods of support, air pressure and rate of placement of shotcrete to prevent sagging or sloughing of freshly-applied shotcrete.

Apply the shotcrete from the lower part of the area upwards to prevent accumulation of rebound on uncovered surfaces. Where shotcrete is used to complete the "birds beak" (ungrouted zone of the nail drill hole near the face), the nozzle must be positioned into the mouth of the drill hole to completely fill the void. Do not use or salvage rebound shotcrete. Remove rebound which does not fall clear of the working area. Hold the nozzle at a distance and an angle approximately perpendicular to the working face so that rebound will be minimal and compaction will be maximized. Rotate the nozzle steadily in a small circular pattern.

Defective Shotcrete

Repair surface defects as soon as possible after initial placement of the shotcrete. Remove all shotcrete which lacks uniformity, exhibits segregation, honeycombing or lamination or contains any voids or sand pockets and replace with fresh shotcrete to the satisfaction of the Engineer.

Construction Joints

Uniformly taper construction joints toward the excavation face over a minimum distance equal to the thickness of the shotcrete layer. Clean and prepare the surface of the nail grout at the face of the wall to receive shotcrete in a manner equal to all other construction joints.

Finish

Shotcrete finish should be either an undisturbed gun finish as applied from the nozzle or a screened finish.

I. Climate

Do not place shotcrete in cold weather when the ambient temperature is below 40°F (4.5°C) and the shotcrete is likely to be subjected to freezing temperatures before gaining sufficient strength to avoid damage. Maintain cold weather protection until the strength of the in-place shotcrete is greater then 750 psi (5.2 MPa). Cold weather protection may include heating under tents, blankets or other means acceptable to the Engineer. Materials may be heated in order that the temperature of the shotcrete, when deposited, is not less than 50°F (10°C) or more than 90°F (32°C).

Suspend shotcrete application during high winds and heavy rains when in the opinion of the Engineer the quality of the application is not acceptable. Remove and replace shotcrete that is exposed to rain and washes out cement or otherwise makes the shotcrete unacceptable to the Engineer. Provide polyethylene sheeting or equivalent when adverse exposure to weathering is anticipated. Secure polyethylene film to the top and bottom of the excavation.

Wall Drainage Network

The drainage network consists of installing prefabricated geocomposite drainage strips and weep hole drain pipes as shown in the approved submittals or as directed by the Engineer. Install all elements of the drainage network prior to shotcreting.

Geocomposite Drainage Strips

Install geocomposite drain strips as shown in the approved submittals. Place drain strips at construction joints such that the joint is aligned as close as practical along the middle of the longitudinal axis of the drain strip.

Use geocomposite drain strips at least 12 inches (300 mm) wide and secure to the cut face with the geotextile side against the ground before shotcreting. Use securing pins at least 8 inches (200 mm) long with a 1.5 inch (38 mm) diameter head on a minimum grid pattern of 24 inches (600 mm) on center. Discontinuous drain strips are not allowed. If splices are needed, overlap a minimum of 12 inches (300 mm).

When the drain strips cannot be secured tight against the excavation face, place polyethylene film over the drain edges to prevent excess shotcrete from entering the sides of the drain. Alternatively, the drains may be installed in 16 inch (400 mm) wide strips and the film omitted.

Weep Hole Drainage Pipes

Install weep hole drainage pipes at locations shown in the approved submittals or as directed by the Engineer. The distance between each weep hole may not be more than 10 feet (3 m). Install pipes of solid PVC pipe to direct water from the geocomposite drain strips to the outside of the facing. Connect the pipes to the drain strips by installing prefabricated drain grates in accordance with the drain strip manufacturer's recommendations. Seal the joint between the drain grate and the drain strip and the drainage pipe to prevent shotcrete intrusion. Damage of the geocomposite drainage board which, in the opinion of the Engineer, may cause interruption in flow will require installation of additional weep holes, at the Contractor's expense.

Nail Testing

Both verification and proof testing of the nails are required. Supply all material, equipment and labor to perform the tests. The Engineer will collect all required data with the assistance of the Contractor. Testing of nails may not be performed within three days of nail grout placement or shotcrete application, whichever occurs last.

Where temporary casing of the unbonded test length of test nails is provided, place the casing in a manner which precludes causing any reaction between the casing and the grouted zone of the nail and/or the stressing apparatus during nail testing.

Testing Equipment

Two dial or vernier gauges, a dial gauge support, jack and pressure gauge, master pressure gauge and a reaction frame are required for testing.

Use a minimum of two dial or vernier gauges capable of measuring to 0.001 inch (.025 mm) to measure the nail movement. The dial gauges should have a minimum stroke of 3 inches (75 mm). Align the dial gauges within five degrees from the axis of the nail and support the dial gauges independently of the jacking set-up and the wall. Apply the test load with a hydraulic jack and a pump.

The jack and pressure gauge must be calibrated by an independent testing laboratory as a unit. Provide a pressure gauge that is graduated in 1000 psi (700 KPa) increments or less and has a range not exceeding twice the anticipated maximum pressure during testing unless otherwise approved by the Engineer. Use the pressure gauge to measure the applied load. The minimum ram travel of the jack may not be less than 4 inches (100 mm). The jack should be capable of applying each load in less than one minute.

Independently support and center the jack over the nail so that the nail does not carry the weight of the jack. Calibrate the master pressure gauge with the test jack and pressure gauge as a unit. Monitor the loads on the nails during the verification tests with both the master pressure gauge and electric load cell. The load cell will be used to maintain constant load hold throughout the creep test. Provide recent calibration curves. Place the stressing equipment over the nail in such a manner that the jack, bearing plates, load cell and stressing anchorage are in alignment. Position the jack at the beginning of the test such that unloading and repositioning of the jack during the test is not required.

Provide a reaction frame that is sufficiently rigid and of adequate dimension such that excessive deformation of the test apparatus requiring repositioning of any components does not occur. Where the reaction frame bears directly on the shotcrete, the reaction frame must be designed to prevent fracture of the shotcrete. No part of the reaction frame may bear within 6 inches (150 mm) of the edge of the test nail blockout unless otherwise approved by the Engineer.

Verification Testing

Perform verification testing horizontally prior to procuring materials for or installation of production nails to verify the Contractor's installation methods, soil conditions, nail capacity and design assumptions. Verification tests must be performed within the limits of the work area. **A minimum of two verification tests or one verification test for each set of assumed soil parameters**, which ever is greater, are required at locations approved by the Engineer. Additional verification tests are required where ground conditions differ from those anticipated or as shown in the approved submittals.

Submit details of the verification testing arrangement including the method of distributing test load pressures to the excavation surface (reaction frame), test nail bar size and grade, grouted hole diameter and reaction plate dimensioning to the Engineer

for approval. All verification nail testing must be performed using the same equipment, methods and hole diameter as planned for the production nails. Changes in the drilling or installation method may require additional verification testing as determined by the Engineer at no additional cost to the Department. The nails used for the verification tests are sacrificial and may not be incorporated into the production nail schedule.

Test nails will have both bonded and unbonded lengths. Prior to testing only the bonded length of the test nail may be grouted. The unbonded length of the test nail must be at least 5 feet (1.5 m) unless otherwise approved by the Engineer. The bonded length of the test nail will be based on the bar grade and size such that the allowable bar load is not exceeded, but may not be less than 10 feet (3 m) unless otherwise approved by the Engineer. The allowable bar load during testing may not exceed 80 percent of the ultimate strength of the steel for Grade 150 (1035) bars or 90 percent of the yield strength for Grade 60 and 75 (420 and 520) bars. The minimum bond length of 10 feet (3 m) may require larger or higher grade bars than the production nails in order to achieve 200% of the design load without overstressing the bar. Provide higher capacity bars instead of shortening the bond length too less than the minimum.

The verification test bonded length L_{BV} may not exceed the test allowable bar load divided by two times the design adhesion value. Use the following equation for sizing the test nail bond length to avoid overstressing the verification nail bar:

$$L_{BV} \leq \frac{C f_y A_s}{2 A_D}$$

Where:
- L_{BV} = Maximum Verification Test Nail Bond Length (ft or m)
- f_y = Bar Yield Stress (ksi or kPa)
- A_s = Bar Area (in^2 or m^2)
- A_D = Design Adhesion (kips/ft or kN/m)
- C = 0.8 for Grade 150 (1035) Bar and 0.9 for Grade 60 and 75 (420 and 520) Bars

Determine the design load during testing by the following equation:

$$DTL = L_B \times A_D$$

Where:
- DTL = Design Test Load
- L_B = As-Built Bonded Test Length (ft or m)
- A_D = Design Adhesion (kips/ft or kN/m)

Load and unload verification test nails to twice the design test load (DTL) in accordance with the following schedule.

LOADING		UNLOADING	
LOAD	HOLD TIME	LOAD	HOLD TIME
AL	1 minute	1.75DTL	Until Stable
0.25DTL	10 minutes	1.50DTL	Until Stable
0.50DTL	10 minutes	1.25DTL	Until Stable
0.75DTL	10 minutes	1.00DTL	Until Stable
1.00DTL	10 minutes	0.75DTL	Until Stable
1.25DTL	10 minutes	0.50DTL	Until Stable
1.50DTL	60 minutes	.25DTL	Until Stable
1.75DTL	10 minutes	AL	Until Stable
2.00DTL	10 minutes		

Hold each load increment for at least ten minutes. Monitor the verification test nail for creep at the 1.50 DTL load increment. Measure and record nail movements during the creep portion of the test at 1, 2, 3, 5, 6, 10, 20, 30, 50 and 60 minutes. Extended creep measurements may be required as determined by the Engineer. Maintain all load increments within five percent of the intended load during the creep test using the load cell. Unload the nail in increments of 25 percent with deflection measurements recorded at each unload increment. Each unload increment may be held only for a sufficient time to allow stabilization of the movement reading.

The alignment load (AL) is the minimum load required to align the testing apparatus and may not exceed five percent of the design test load. "Zero" dial gauges after the alignment load has been applied.

Proof Testing

Proof testing is required on at least five percent of the production nails in each shotcrete lift to verify the Contractor's methods and the design nail capacity. The Engineer will determine the specific locations and number of these tests.

Proof test nails will have both bonded and unbonded lengths. Prior to testing only the bonded length of the test nail may be grouted. The unbonded length of the test nail must be at least 5 ft (1.5 m) unless approved otherwise by the Engineer. The bonded length of the test nail will be such that the allowable bar load is not exceeded but may not be less than 10 feet (3 m) unless otherwise approved by the Engineer. The allowable bar load may not exceed 80 percent of the ultimate steel strength for Grade 150 (1035) bars and 90 percent of the yield strength for Grade 60 and 75 (420 and 520) bars.

The proof test bonded length L_{BP} may not exceed the test allowable bar load divided by 1.5 times the design adhesion value. Use the following equation for sizing the test nail bond length to avoid overstressing the production bar:

$$L_{BP} \leq \frac{C f_y A_s}{1.5 A_D}$$

Where: L_{BP} = Maximum Proof Test Nail Bond Length (ft or m)
f_y = Bar Yield Stress (ksi or kPa)
A_s = Bar Stress Area (in^2 or m^2)
A_D = Design Adhesion (kips/ft or kN/m)
C = 0.8 for Grade 150 (1035) Bar and 0.9 for Grade 60 and 75 (420 and 520) Bars

Perform proof tests by incrementally loading the nail to 1.5 times the design test load. Determine the design test load by the equation shown for the verification test nails. Measure and record nail movements at each load in the same manner as for verification test nails. Monitor the load with a pressure gauge with a sensitivity and range meeting the requirements of pressure gauges used for verification test nails. Load proof test nails in accordance with the following schedule.

LOADING	
LOAD	HOLD TIME
AL	Until Stable
0.25DTL	Until Stable
0.50DTL	Until Stable
0.75DTL	Until Stable
1.00DTL	Until Stable
1.25DTL	Until Stable
1.50DTL	10 or 60 minutes

The alignment load (AL) should be the minimum load required to align the testing apparatus and may not exceed five percent of the design load (DTL). "Zero" dial gauges after the alignment load has been applied.

Maintain all load increments within five percent of the intended load. Depending on performance, either 10 minute or 60 minute creep tests are required at the maximum test load (1.50 DTL). The creep period will start as soon as the maximum test load is applied. Measure and record nail movements at 1, 2, 3, 5, 6 and 10 minutes. Where nail movement between one minute and 10 minutes exceeds 0.04 inch (1 mm), maintain the maximum test load an additional 50 minutes and record movements at 20, 30, 50 and 60 minutes.

Test Nail Acceptance

A test nail will be considered acceptable when:

1. For verification tests, a creep rate less than 0.08 inches (2 mm) per log cycle of time between the six and 60 minute readings is observed during creep testing and the rate is linear or decreasing throughout the creep test load hold period.

2. For proof tests: (a) a total creep less than 0.04 inches (1 mm) is observed between the one and 10 minute readings creep test or a creep rate less than 0.08 inches (2 mm) per log cycle of time is observed during the 60 minute creep test between six

and 60 minute readings and; (b) the creep rate is linear or decreasing throughout the creep test load hold period.

3. The total movement at the maximum test load exceeds 80 percent of the theoretical elastic elongation of the test nail unbonded length.

4. A pullout failure does not occur at the maximum test load. Pullout failure load is defined as the load at which attempts to increase the test load simply result in continued excessive pullout movement of the test nail. Record the pullout failure load as part of the test data.

Proof test nails may be incorporated into the production nail schedule provided that (1) the unbonded test length of the nail hole has not collapsed during testing, (2) the minimum required hole diameter has been maintained and (3) the test nail length is equal to or greater than the scheduled production nail length. Complete test nails meeting these requirements by satisfactorily grouting the unbonded test length. If the unbonded test length of production proof test nails cannot be grouted subsequent to testing due to caving conditions or other reasons, replace the test nail with a similar production nail to the satisfaction of the Engineer at no additional cost to the Department.

Test Nail Results

Verification Test Nails

The Engineer will evaluate the results of each verification test. Installation methods that do not satisfy the nail testing requirements will be rejected. Where the design adhesion is not attainable by reasonable means, revise the production nail schedule. Incorporate any increases in the quantity, the lengths or the diameters of nails as required by the designer. Reasonable means will be considered to include gravity grouted nails installed as specified herein to the minimum diameter required or to a maximum diameter of 10 inches (250 mm).

Proof Test Nails

The Engineer may require that the Contractor replace some or all of the installed production nails between the failed proof test nail and the adjacent passing proof test nail. Abandon nails which fail in proof test and replace them with new proof test nails. Also, the Engineer may require that additional proof testing be conducted to verify that adjacent nails have sufficient load carrying capacity. Modifications may be required which include installing additional test or production nails, installing longer production nails, increasing the drill hole diameter or modifying the installation methods.

Tolerances

Soil Nails

Center the bars within 1 inch (25 mm) of the center of the hole. Individual nails must be positioned plus or minus 6 inches (150 mm) from the design locations shown in the approved submitals unless otherwise directed by the Engineer. Location tolerances will be considered applicable to only one nail and not accumulative over large wall areas. The nail inclination should be plus or minus two degrees of that shown in the plans. Use a magnetic angle-indicator tool to align the drill inclination prior to drilling each nail installation hole. Relocate nails which encounter unanticipated obstructions during drilling as directed by the Engineer. Replace soil nails which do not satisfy the specified tolerances due to the Contractor's installation to the Engineer's satisfaction at no additional cost to the Department.

Records

Record the following information:

1. Contractor's and drill rig operator's names
2. Design and as-built, nail locations and elevations
3. Deviations from specified tolerances
4. Design and as-built, hole lengths and diameters

5. Design and as-built, bar lengths and sizes

6. Groundwater conditions

7. Caving or sloughing of excavation

8. Casing requirements

9. Drilling difficulties

10. Date and time of start and finish of drilling

11. Date, time and method grout was placed including grout pressure

12. Total daily quantity of grout placed and quantity per hole

13. Design changes

Upon completion of the work, submit a complete record of the construction activities including the information listed above to the Engineer.

Measurement and Basis of Payment

Temporary soil nail walls will be paid for at the unit bid price for "Temporary Soil Nail Wall at Slide #2" per square foot (square meter) of exposed wall area. The unit bid price will constitute full compensation for all the materials, labor, tools, equipment, testing and incidentals required to design and construct the temporary soil nail walls.

Temporary Soil Nail Wall at Slide #2.....Square Foot (square meter)

TENSIONED ROCK BOLTS 10-12-04

1.0 DESCRIPTION

Furnish, install and test 1-1/4 inch diameter, 10 ft. minimum long steel bar rock anchors at locations as determined by the Engineer. The installation frequency, location and length of Rock Bolts are to be determined by the Engineer during construction of the Toe Scour Protection. Conditions encountered may require the Engineer to change the frequency and length of Rock Bolts from those indicated by these Special Provisions.

The Contractor is cautioned to the fact that the location of Rock Bolts may require the Contractor to work from cranes or other specialized methods.

Unless otherwise specified herein, install anchors according to the anchor manufacturer procedures and recommendations or as directed by the Engineer.

2.0 SUBMITTALS

Supply the following information:

A. Shop Drawings: Not less than 5 days prior to fabrication and include:

1-1/4 inch diameter rock anchor design details, including bond length, method of corrosion protection for permanent anchors, the head assembly, and reinforced concrete reaction block complete with doweling and reinforcing details. Detail drawings including specific method and procedure for drilling, installing, grouting and testing rock anchors.

B. Calibration Certificates: Not less than 5 days prior to commencing drilling and include:

Tensioning jack calibration certificate(s) of test which have been performed not more than 5 days prior to commencing drilling. Provide certificate showing the relationship between gauge pressure and applied load.

C. Product Data and Manufacturer's Instructions: Not less than 5 days prior to commencing drilling and include:

1. Pre-mixed, non-shrink anchoring grout type.

2. Anti-corrosion compound for inside of anchor head.

3. Mill test reported for each heat or lot of prestressing components used to fabricate the anchors showing ultimate load, yield, percent elongation at yield and modulus of elasticity.

D. Daily Records: Within 5 days after completion of each anchor installation in each area. Submit records of each rock anchor on the Contractors anchor report form and test log. Include drilling conditions, bolt location, length, and grout volume.

3.0 MATERIALS

A. 1-1/4 Inch Diameter Rock Anchors

1. General: Use anchor assembly 1-1/4 inch diameter, 20 ft. long Grade 60 ksi deformed or continuously threaded steel bar conforming to ASTM 615 complete with corrosion protection system for permanent installations,

centralizers on 4 ft. centers in bond zone, couplings where required, grout tubes, and anchor head assembly consisting of reinforced concrete reaction block, anchor plate, hardened washers, nut, and steel cover. The anchor head assembly must be capable of developing 100 percent of the guaranteed minimum ultimate tensile strength of the bar without cracking or deformation. Do not exceed a bearing pressure on the reaction block concrete of 4000 psf.

2. Manufacturer: Use all prestressing components from the product of a manufacturer regularly engaged in the fabrication of permanent rock anchor systems. The fabrication procedure must be in strict accordance with the manufacturer details.

3. Assembly: Use anchor assembly consisting of a bond length to be determined by the Contractor, and a variable free stressing length to suit any changes to the hole lengths. The assembly must be accordance to the manufacturers approved details.

4. Corrosion Protection: Include a corrosion protection system for the permanent rock anchor to protect the full length of the bar. The corrosion protection system should comprise a continuous plastic sheath grouted on to the bar, or and approved equivalent system. Apply corrosion protection system to the bars prior to their installation in the drill holes. Protect anchor head and the exposed bar under the anchor plate against corrosion, including an arrangement for pumping an anti-corrosion compound under the reaction plate to form a continuous seal of the unprotected portion of the bar.

   Paint the exposed anchor plate and bar with two coats of zinc-rich paint; the zinc-rich paint must meet the requirements of Article 1080-9 of the Standard Specifications.

B. Anchoring Grout

1. The grout must be a pre-mixed, unsanded, non-metallic, non-shrink grout, which can be mixed to a flowable consistency with a minimum 7-day compressive strength of 3000 psi. and a minimum 28 day compressive strength of 5500 psi. Cylinders will be made at such frequencies as determined by the Engineer and conduct testing in accordance to Section 1054-6 of the Standard Specifications.

2. Use pre-mixed grout from the product of a manufacturer regularly engaged in the manufacture of cementitious grouts for rock anchoring.

   a. Water

      Use water in Portland cement grouts that is clear, fresh water, free from injurious amounts of oil, acid, alkali, organic matter, sediment or any other deleterious substance.

b. Reinforced Concrete Reaction Blocks

Reinforced concrete reaction blocks, where required, to level or wedge the ground surface must be adequately reinforced to withstand the pressure of the reaction plate. All materials must meet the requirements for incidental concrete in Section 825 of the Standard Specifications.

3.0 CONSTRUCTION METHODS

A. General

Prior to installation, all anchor corrosion protection components and the anchor assembly must be handled and stored to avoid corrosion and damage such as abrasion, cuts, cracks, nicks, pits, welds or weld splatters. Furthermore, once the corrosion protection sheath has been grouted, use special handling procedures to prevent bending of the bar that could crack the grout in the sheath. Any such damage of the anchor components of the anchor assembly may be rejected as determined by the Engineer.

B. Installation Sequence

Sequence rock anchor installation and blasting operations such that no blasting is carried out within a distance of 200 feet from any bolt until the grout anchorage has set for a time not less than six days.

C. Site Preparation

Before drilling anchor holes, level all soil and loose and broken rock in the bearing area.

D. Drilling

1. General:

a. Equipment: Drill holes with a rotary-percussion drill.

b. Drill Logs: Driller must keep an accurate log noting depth from surface of any changes in rock hardness, rate of drilling, presence of water, fracture zones and voids.

c. Cleaning: Clean holes thoroughly of all cuttings and rock fragments by flushing with high pressure air.

d. Sequence: Drilling must precede reaction block construction.

2. Anchor Holes: 74

   a. Dimensions: Drill anchor holes a minimum diameter of 4 inch or as specified by the anchor manufacturer and 2 feet deeper than the anchor length.

   b. Orientation: Drill anchor holes no more than 30 degrees from vertical.

   c. Deviation: The anchor holes must not deviate by more than one foot from the specified location determined by the collar location and the required alignment of the anchor. The Engineer may require that drill hole orientation surveys be carried out, at the Contractors expense, where there is evidence of excessive deviation.

E. Water Test

1. Test Procedure: After cleaning the hole, fill drill hole with water, and the flow of water into the rock surrounding the hole must be observed for a period of 5 minutes.

2. Acceptance Criteria: The flow of water must not exceed 0.001 gals/inch diameter/foot depth/minute.

3. Grout and Re-drill: If the water flow exceeds the acceptance criteria, grout the hole with a cementitious sealing grout. Within 24 hours after grouting, re-drill and re-test the hole. Perform the grouting and re-drilling procedure until the hole has passed the acceptance criteria. Conduct procedure at the Contractors expense.

F. Anchor Insertion:

1. Following acceptance of a drill hole, install the rock anchor assembly comprising steel bar, corrosion protection, centralizers and grout tubes in the hole. Do not bend anchors during handling and anchor must slide freely into the hole without hammering or pushing.

2. The anchor head assembly must be firmly supported at its final location during grouting and for the curing period.

G. Grouting

1. General: Place grout only at the temperature range recommended by the grout manufacturer.

   Do not use grout with an expired date in the work and dispose of at an authorized location.

Do not use grout that has any hardened lumps in the work and dispose of at an authorized location.

2. Mixing: Mix grout in a colloidal or high shear grout mixer in accordance with the grout manufacturers published instructions. Use only enough mixing water to produce a grout with the required consistency for the placing method proposed. Place grout immediately after mixing.

3. Placing Grout:

   a. General: Place grout quickly and continuously to avoid overworking, segregation, bleeding and disturbance of initial set.

      Do not use grout which has stiffened due to delay in the work and dispose of at an authorized location.

      Do not re-temper grout after initial mixing.

   b. Pump grout into the annular space between the rock and the anchor using a grout tube extending to the lower end of the drill hole to fill the hole to the collar.

H. Concrete Reaction Blocks

1. General: Construct a concrete reaction block or a suitable quick set mix approved by the Engineer at each anchor location, where the ground has inadequate bearing capacity to support the load under the reaction plate, or where the ground surface is irregular or is not aligned at right angles to the axis of the anchor. The reaction block must form a uniform bearing surface for the steel reaction plate such that the bearing plate is aligned at right angles to the anchor, with its center coincident with the axis of the bar assembly.

2. Surface Preparation: Prior to pouring concrete on the ground surface, level surface with air/water jets and stiff brooming.

3. Anchor Block Construction: The concrete reaction block or quick set mix must be sized and reinforced as necessary to provide a bearing surface that can sustain the applied stress under the reaction block without bending or cracking.

I. Testing

1. Setting Time: The grout in the bond zone and concrete in the reaction block must meet the strength specified by the anchor manufacturer prior to testing the anchors.

2. Notification: Notify the Engineer notification of testing 48 hours prior to commencing testing.

3. Testing Equipment: Supply all testing, measuring and ancillary equipment.

4. Test Procedure: Set up a stable system to support the dial gauge used to make absolute measurements of the deflection of the head of the anchor. The system must be acceptable to the Engineer who will record and process all load/deflection measurements.

5. Hydraulic Jack: Tension all anchors using a calibrated hydraulic jack as specified by the anchor manufacturer.

6. Test Loads: Tension the anchors to the following loads:

Alignment Load (AL)	-	10 kips
Test Load (1.25P)	-	75 kips
Transfer Load (P)	-	60 kips

7. Performance Tests: Conduct performance tests on the first three (3) anchors in each Area, and up to thirty (30) other anchors in the project as selected by the Engineer. The Performance Test consists of a cyclic loading program according to the following procedure, with deflection of the head measured relative to a stable reference point to an accuracy of .001 inch at each load interval:

   i. AL, 0.25P, AL,
   ii. 0.25P, 0.5P, AL,
   iii. 0.25P, 0.5P, 0.75P, AL,
   iv. 0.25P, 0.5P, 0.75P, 1.0P, AL,
   v. 0.25P, 0.5P, 0.75P, 1.0P, 1.25P
   vi. Hold for Creep Test
   vii. Lock off at 1.0P

8. Proof Test: Proof test all anchors not performance tested according to the following procedure, with deflection of the head measured relative to a stable reference point to an accuracy of 0.001 inch at each load interval:

   i. AL, 0.25P, 0.5P, 0.75P, 1.0P, 1.25P,
   ii. Hold for Creep Test,
   iii. Lock off at 1.0P.

9. Creep Test: At the Test Load on each anchor, perform a creep test by holding the load constant and recording the deflection of the head at the following time intervals:

   i. 0, 0.5, 2, 5, 10, 30, 50 minutes for Performance Test,
   ii. 0, 0.5, 2, 5 minutes for Proof Test.

10. Lift-off Test: After locking off the anchor at the Transfer Load, re-apply the load to determine the lift-off load. The lift-off load is the load at which the head of the anchor just starts to move as the load is applied.

J. Acceptance Criteria

1. Criteria: Accept an anchor if the following criteria are met:

The total elastic movement at the anchor head must be more than 80% of the theoretical elastic elongation of the free stressing length, and less than 100% of the theoretical elastic elongation of the free stressing length plus 50% of the bond length.

The creep movement at the anchor head does not exceed 0.08 inch during the Creep Test.

The lift-off load is within 10% of the Transfer Load.

2. Anchor Failure: If any anchor fails to meet the acceptance criteria, the Contractor, at his expense, must perform all of the following:

a. Re-test the failed anchor using Performance Test procedures to as high a load as possible and determine the maximum load that will satisfy acceptance criteria I, II and III. Install an additional anchor in accordance with this specification at a location selected by the Engineer. The two anchors combined tension must not be less than 100 percent of the Test Load (P).

b. Submit any method for improving the capacity of the anchor and obtain the Engineers authorization to proceed.

c. For each failed anchor, test or re-test using Performance Test procedures, one additional anchor as selected by the Engineer.

5.0 METHOD OF MEASUREMENT

The quantity of 1¼ inch diameter rock bolts to be paid for will be measured by the linear feet from the lower end of the bar to the upper surface of the anchor plate to the nearest foot.

6.0 BASIS OF PAYMENT

The quantity of Tensioned Rock Bolts, measured as provided above will be paid for at the contract unit price per linear foot for Tensioned Rock Bolts.

Such price and payment will be considered full compensation for all work covered by this provision including but not limited to furnishing all materials, drilling, tensioning, testing, alignment measurements, grouting/redrilling as required, anchor grouting, and meeting all acceptance criteria of the anchors, as well as construction of the reaction blocks and removal of all formwork.

Payment will be made under:

Tensioned Rock Bolt.....Linear Feet

DEPARTMENT FURNISHED PORTABLE CONCRETE BARRIER 10-13-04

DESCRIPTION.

Obtain, maintain, and return Department Furnished Portable Concrete Barrier (PCB) in accordance with the plans and specifications.

CONSTRUCTION METHODS.

Transport the Portable Concrete Barrier to the project.

METHOD OF MEASUREMENT.

The quantity of Department Furnished Portable Concrete Barrier to be paid for will be the actual number of linear feet of barrier which has been obtained, installed, maintained, relocated, and returned to the Department.

BASIS OF PAYMENT.

The quantity of Department Furnished Portable Concrete Barrier, measured as provided above, will be paid for at the contract unit price for each "Department Furnished Portable Concrete Barrier".

Payment will be made under:

Pay Item	Pay Unit
Department Furnished Portable Concrete Barrier	Linear Foot

POLYUREA PAVEMENT MARKING MATERIAL **10-13-04**
HIGHLY RETROREFLECTIVE ELEMENTS

Section 1205-1 DESCRIPTION:

This special provision covers machine applied "Highly Retroreflective" Polyurea pavement marking material with reflective elements. All remaining Articles in Section 1205 shall be as described in the *2002 Standard Specifications for Roads and Structures* with the exceptions below.

Section 1205-2 Materials

(A) General

Replace Article (A) with the following:

Use Section 1087-Articles 1, 3, 5 & 6 (General, Color, Packaging for Shipment, and Storage Life) as described in the 2002 Standard Specifications for Roads and Structures. The manufacturer may recommend any remaining information necessary for the placement of "Highly Retroreflective" Polyurea pavement markings.

(B) Material Qualification

Replace Article (B) with the following:

Use only "Highly Retroreflective" polyurea pavement markings that have been pre-approved by the Traffic Control Section prior to application. Use retroreflecting elements according to the manufacturer's recommendations in order to meet the retroreflectivity requirements as stated in Section 1205-3(G)(8) as measured by a LTL 2000, LTL-X or Department approved 30m mobile retroreflectometer.

Furnish a Type 3 Material Certification and Type 4 Material Certification in accordance with Article 106-3 as described in the 2002 Standard Specifications for Roads and Structures.

For more information, contact the Traffic Control Section at 919 250-4151.

Section 1205-3 Construction Methods

Section 1205-3(B) (1) General for all Application Equipment: Add the following sentence after the last paragraph:

Do not use handliners or any other non-truck mounted pavement marking machine to install "Highly Retroreflective" polyurea pavement markings on long-line applications.

Add the following Section immediately following Section 1205-3(G)(8)

Section 1205-3 (G) (9) "Highly Retroreflective" Polyurea Application:

Produce "Highly Retroreflective" Polyurea pavement marking lines which have a minimum dry thickness of 20 mils (0.50mm) when placed on concrete and asphalt pavements.

Using the Polyurea application equipment, apply the pavement marking materials simultaneously. Apply the Polyurea resin, mixed at the proper ratio according to the manufacturer recommendations, to the pavement surfaces within the proper application temperatures as determined by the material manufacturer. Inject reflective elements into the molten (liquid) Polyurea pavement markings.

Apply reflective elements according to manufacturer's recommendation to immediately produce a highly reflective marking.. At the time of installation, provide in-place marking with the minimum reflectance values shown below, as obtained with a LTL 2000, LTL-X or Department approved 30m mobile retroreflectometer. Maintain the retroreflectance values shown below for a minimum of 30 days from the time of placement of marking material.

WHITE: 800 mcd/lux/m2
YELLOW: 500 mcd/lux/m2

Produce marking, which upon cooling, is uniformly reflectorized and has the ability to resist deformation caused by traffic throughout its entire length.

The manufacturer of the Polyurea pavement marking material shall certify the Contractor to place the material. Provide at least one member of each crew that completed this training. Furnish the Engineer written confirmation of this training from the material manufacturer prior to the beginning of work. The manufacturer's technical representative shall be onsite during the entire installation of product.

Provide a manufacturer's technical representative that is knowledgeable and familiar with the Contractors application equipment prior to the installation of the Polyurea pavement markings.

Section 1205-3(H)(1) Observation Period for "Highly Retroreflective" Polyurea Pavement Markings:

Replace the first paragraph with the following:

Thermoplastic, epoxy, and polyurea pavement markings are subject to a 180 day observation period.

Add the following just before the last paragraph:

Provide high visibility polyurea pavement marking materials that maintain minimum retroreflectance values throughout the observation period as follows:
WHITE: 700 mcd/lux/m2
YELLOW: 400 mcd/lux/m2

In addition to the 180 day observation period, provide high visibility polyurea pavement marking materials that meet the following minimum retroreflectance values after having been snowplowed:

WHITE: 375 mcd/lux/m2
YELLOW: 250 mcd/lux/m2

These measurements will be taken within 30 days prior to the end of the Observation Period. The reflectance values will be taken using a LTL 2000, LTL-X or Department approved 30m mobile retroreflectometer.

Section 1205-3(I) Removal of Pavement Markings:

Add the following just before the last paragraph:

Do not apply Polyurea pavement marking over existing pavement marking materials having less adherence than the Polyurea. Remove existing lines according to the manufacturer's recommendations.

Measurement and Payment:
Measurement and payment shall be in accordance with Section 1205 of the *North Carolina Standard Specifications for Roads and Structures*.

112.104401 **Project Special Provisions** **Haywood County**
Erosion Control

Seeding And Mulching (8ED)

The kinds of seed and fertilizer, and the rates of application of seed, fertilizer, and limestone, shall be as stated below. During periods of overlapping dates, the kind of seed to be used shall be determined by the Engineer. All rates are in pounds per acre (kilograms per hectare).

August 1 - June 1		May 1 - September 1	
20# (23kg)	Kentucky Bluegrass	20# (23kg)	Kentucky Bluegrass
75# (85kg)	Hard Fescue	75# (85kg)	Hard Fescue
500# (560kg)	Fertilizer	25# (28kg)	German or Browntop Millet
4000# (4500kg)	Limestone	500# (560kg)	Fertilizer
		4000# (4500kg)	Limestone

Approved Kentucky Bluegrass Cultivars:

Adelphi	Baron	Bristol	Challenger
Columbia	Fylking	Glade	Kenblue
Merit	Plush	Ram I	Rugby
Sydsport	Touchdown	Vantage	

Approved Hard Fescue Cultivars:

Aurora	Bardur	Crystal	Reliant	Scaldis
Spartan	Valda	Waldina	Warwick	

On cut and fill slopes 2:1 or steeper add 25# (28kg) Rye Grain August 1 - June 1.

On cut and fill slopes 2:1 or steeper add 30# (35 kg) Sericea Lespedeza January 1 - December 31.

Fertilizer shall be 10-20-20 analysis. Upon written approval of the Engineer, a different analysis of fertilizer may be used provided the 1-2-2 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as a 10-20-20 analysis.

Temporary Seeding:

Fertilizer shall be the same analysis as specified for "Seeding and Mulching" and applied at the rate of 400 pounds (450kg) and seeded at the rate of 50 pounds per acre (55kg per hectare). German Millet, or Browntop Millet shall be used in summer months and rye grain during the remainder of the year. The Engineer will determine the exact dates for using each kind of seed.

Fertilizer Topdressing:

Fertilizer used for topdressing shall be 16-8-8 grade and shall be applied at the rate of 500 pounds per acre (560 kg per hectare). Upon written approval of the Engineer, a different analysis of fertilizer may be used provided the 2-1-1 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as 16-8-8 analysis.

Supplemental Seeding:

The kinds of seed and proportions shall be the same as specified for "Seeding and Mulching", and the rate of application may vary from 25# to 75# per acre (28kg to 85kg per hectare). The actual rate per acre (hectare) will be determined by the Engineer prior to the time of topdressing and the Contractor will be notified in writing of the rate per acre (hectare), total quantity needed, and areas on which to apply the supplemental seed. Minimum tillage equipment, consisting of a sod seeder shall be used for incorporating seed into the soil as to prevent disturbance of existing vegetation. A clodbuster (ball and chain) may be used where degree of slope prevents the use of a sod seeder.

Mowing:

The minimum mowing height on this project shall be six inches (150 mm).

Specialized Seeding Under Guiderail and Guardrail (Hard Fescue/Bluegrass):

General:

Areas under guiderail and guardrail sections shall be seeded in accordance with these provisions and as directed by the Engineer. Perform the work covered by this provision including but not limited to litter and debris removal, mowing, disposal of weeds and other unacceptable growth, grading, soil preparation and amendment, surface smoothing, seed applications, and matting installation.

Materials:

Only approved Hard Fescue and Kentucky Bluegrass seed that complies with Section 1060 of the Standard Specifications shall be used.

Soil Preparation:

Remove litter and other debris. Mow and satisfactorily dispose of weeds or other unacceptable growth on the areas to be seeded.

Prior to seeding, all eroded, uneven and rough areas shall be contour graded and/or filled with soil as directed by the Engineer. The soil shall be scarified or otherwise loosened to a depth of not less than 5 inches (130 mm) with a minimum width of 48 inches (1145 mm) and a maximum width of 52 inches (1320 mm). Clods shall be broken and the top 2

to 3 inches (52 to 78 mm) of soil shall be worked into an acceptable soil bed by the use of soil pulverizers, drags, or harrows.

Soil amendments shall be as follows:

Limestone: Limestone shall be applied at a rate of 4000 pounds (4500 Kg/Hectare) per acre.

Fertilizer: Fertilizer shall be 10-20-20 analysis and applied at a rate of 500 pounds (560kg/Hectare) per acre.

After soil preparation, lime and fertilizer shall be uniformly distributed by mechanical means using a 48 inch (1065 mm) drop type spreader and thoroughly mixed with the top five inches (130 mm) of the soil by discing, harrowing, or other approved methods.

The area shall then be harrowed, dragged, raked, or prepared by other approved methods which will give a lawn type finish. All trash, debris and stones larger than 1-1/2 inch (38 mm) in diameter or other obstructions shall also be removed.

Application:

(Hard Fescue/Bluegrass) seed shall be uniformly distributed at a rate of 75 pounds per acre (85 kilograms per hectare) of Hard Fescue and 20 pounds per acre (28 kilograms per hectare) of Kentucky bluegrass by mechanical means.

Immediately following the placement of seed, the area shall be rolled or tamped carefully and firmly by means acceptable to the Engineer to ensure a smooth surface. Use of rubber tired equipment to roll shall not be allowed.

Matting:

Immediately upon completion of seeding work and herbicidal application, 48 inch wide matting shall be installed over the seeded area in accordance with Section 1631 of the Standard Specifications.

Basis of Payment:

The quantity of "Specialized Seeding Under Guiderail and Guardrail (Hard Fescue/Bluegrass)" to be paid for will be the actual number of acres (hectares) of guiderail and guardrail sections, measured along the surface of the ground, over which acceptable seeding has been performed. The quantity of seeding will be paid for at the contract unit price per acre (hectare) for "Specialized Seeding Under Guiderail and Guardrail (Fescue/Bluegrass)".

No payment shall be made for "Specialized Seeding Under Guiderail and Guardrail (Fescue/Bluegrass)" in which the work has not been satisfactorily completed. Complete

work includes but is not limited to soil preparation, surface smoothing, seeding, and matting.

Specialized Hand Mowing:

The work covered by this section consists of specialized hand mowing around or under fixed objects, including but not limited to guardrails, signs, barriers and slopes in a method acceptable to the Engineer.

The work of specialized hand mowing shall be completed with mechanically powered trimmers, string trimmers, hand operated rotary mowers, or self-propelled mowers of sufficient size and quality to perform the work timely and efficiently.

The quantity of mowing to be performed will be affected by the actual conditions which occur during the construction of the project. The quantity of mowing may be increased, decreased or eliminated entirely at the direction of the Engineer. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

The quantity of specialized hand mowing to be paid for will be the actual number of man hours worked while hand mowing along the surface of the ground, at the direction of the Engineer. Where an area has been mowed more than once, at the direction of the Engineer, separate measurement will be made each time the area is mowed.

Payment will be made under:

Specialized Hand Mowing ..... HR

Minimize Removal Of Vegetation

The Contractor shall minimize removal of vegetation at stream banks and disturbed areas within the project limits as directed by the Engineer.

Stockpile Areas

The Contractor shall install and maintain erosion control devices sufficient to contain sediment around any erodible material stockpile areas as directed by the Engineer.

Waste Areas And Borrow Sources:

Payment for temporary erosion control measures, except those made necessary by the Contractor's own negligence or for his own convenience, will be paid for at the appropriate contract unit price for the devices or measures utilized in borrow sources and waste areas.

No additional payment will be made for erosion control devices or permanent seeding and mulching in any commercial borrow or waste pit. All erosion and sediment control

practices which may be required on a commercial borrow or waste site will be done at the Contractor's expense.

Gravel Construction Entrance:

Description:

The work covered by this section consists of furnishing, installing, and maintaining and removing any and all material required for the construction of a Gravel Construction Entrance.

Materials:

The filter fabric shall meet the requirements of Section 1056 for Type 2 Fabric.

Stone shall be Class A Stone and shall meet the requirements of Section 1042 for Stone for Erosion Control, Class A.

Construction:

The Contractor shall install a Gravel Construction Entrance in accordance with the details in the plans and at locations as directed by the Engineer.

Method Of Measurement:

Gravel Construction Entrance will not be measured for payment under this section.

Basis Of Payment:

Payment for installation of Filter Fabric shall be paid for at the contract unit price per square yard (square meter) "Filter Fabric for Drainage".

Payment for installation of Class A Stone shall be paid for at the contract unit price per ton (metric ton) "Stone for Erosion Control, Class A".

Such price and payment shall be considered full compensation for all work covered by this provision including all materials, construction, maintenance, and removal of Gravel Construction Entrance as directed by the Engineer.

PROJECT SPECIAL PROVISIONS
PERMITS

The Contractor's attention is directed to the following permit, which has been issued to the Department of Transportation by the authority granting the permit.

PERMIT	AUTHORITY GRANTING THE PERMIT
16 USC 1761-1771	U.S. Department of Agriculture

The Contractor shall comply with all applicable permit conditions during construction of this project. Those conditions marked by * are the responsibility of the department and the Contractor has no responsibility in accomplishing those conditions.

Agents of the permitting authority will periodically inspect the project for adherence to the permits.

The Contractor's attention is also directed to Articles 107-10 and 107-14 of the Standard Specifications and the following:

Should the Contractor propose to utilize construction methods (such as temporary structures or fill in waters and/or wetlands for haul roads, work platforms, cofferdams, etc.) not specifically identified in the permit (individual, general, or nationwide) authorizing the project it shall be the Contractor's responsibility to coordinate with the Engineer to determine what, if any, additional permit action is required. The Contractor shall also be responsible for initiating the request for the authorization of such construction method by the permitting agency. The request shall be submitted through the Engineer. The Contractor shall not utilize the construction method until it is approved by the permitting agency. The request normally takes approximately 60 days to process; however, no extensions of time or additional compensation will be granted for delays resulting from the Contractor's request for approval of construction methods not specifically identified in the permit.

Where construction moratoriums are contained in a permit condition which restricts the Contractor's activities to certain times of the year, those moratoriums will apply only to the portions of the work taking place in the waters or wetlands provided that activities outside those areas is done in such a manner as to not affect the waters or wetlands.

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Authorization ID: FRE102001
Contact ID: FRE1019
Expiration Date: 12/31/2005
Use Code: 741

FS-2700-25 (02/99)
OMB NO. 0596-0082

U.S. DEPARTMENT OF AGRICULTURE
Forest Service
TEMPORARY SPECIAL - USE PERMIT
(FSH 2709.11, sec. 54.6)
AUTHORITY:
16 USC 1761-1771

North Carolina Department of Transportation, hereinafter called the Holder, is hereby authorized to use, subject to the terms and conditions of this permit, National Forest System land identified within the Appalachian Ranger District, Pisgah National Forest and described as a portion of USA Tract P-31, as shown on the attached Exhibit. This authorization covers approximately five acres.

The holder is authorized to conduct the following activities and/ or install the following temporary improvements on the permitted area: Repair of slide area on Interstate 40 located in the Pigeon River Gorge in accordance with the construction plans contained in the project file.

TERMS AND CONDITIONS

1. Use under this permit shall begin on October 22, 2004 and end on December 31, 2005. The permit shall not be extended.
2. The fee for this use is waived in accordance with 36 CFR 251.57(b)(1).
3. The holder shall conduct the authorized activities according to the attached approved plans and specifications.
4. The holder shall not install any improvements not specifically identified and approved above.
5. No soil, trees, or other vegetation may be destroyed or removed from National Forest System lands without specific prior written permission from the authorized officer.
6. The holder shall comply with all Federal, State, county, and municipal laws, ordinances, and regulations which are applicable to the area or operations covered by this permit.
7. The holder shall maintain the improvements and premises to standards of repair, orderliness, neatness, sanitation, and safety acceptable to the authorized officer. The holder shall fully repair and bear the expense for all damage, other than ordinary wear and tear, to National Forest System lands, roads and trails caused by the holder's activities.
8. The holder has the responsibility of inspecting the use area and adjoining areas for dangerous trees, hanging limbs, and other evidence of hazardous conditions which would pose a risk of injury to individuals. After securing permission from the authorized officer, the holder shall remove such hazards.
9. The holder shall be liable for any damage suffered by the United States resulting from or related to use of this permit, including damages to National Forest resources and costs of fire suppression.
10. The holder shall hold harmless the United States from any liability from damage to life or property arising from the holder's occupancy or use of National Forest lands under this permit.
11. The holder agrees to permit the free and unrestricted access to and upon the premises at all times for all lawful and proper purposes not inconsistent with the intent of the permit or with the reasonable exercise and enjoyment by the holder of the privileges thereof.
12. This permit is subject to all valid existing rights and claims outstanding in third parties.
13. This permit may be revoked upon breach of any of the conditions herein or at the discretion of the authorized officer. Upon expiration or revocation of this permit, the holder shall immediately remove all improvements except those owned by the United States, and shall restore the site within thirty day(s), unless otherwise agreed upon in writing. If the holder fails to remove the improvements, they shall become the property of the United States, but that will not relieve the holder of liability for the cost of their removal and restoration of the site.
14. This permit is a license for the use of federally owned land. It does not grant any interest in real property. This permit is not transferable. The holder shall not enter into any agreements with third parties for occupancy of the authorized premises and improvements.

15. Appeal of any provisions of this permit or any requirements thereof shall be subject to the appeal regulations at 36 CFR, Subpart C, or revisions thereof.
16. This permit is accepted subject to the conditions set forth herein, condition(s) and Exhibit(s) attached to and made a part of this permit.
17. The above clauses shall control if they conflict with additional clauses or provisions.

I have read and understand the terms and conditions and agree to abide by them.

NORTH CAROLINA
Department of Transportation

By:_____
J.B. SETZER, P.E.
Division Engineer

Date:_____

U. S. DEPARTMENT OF AGRICULTURE
Forest Service

By:_____
JOHN F. RAMEY
Forest Supervisor

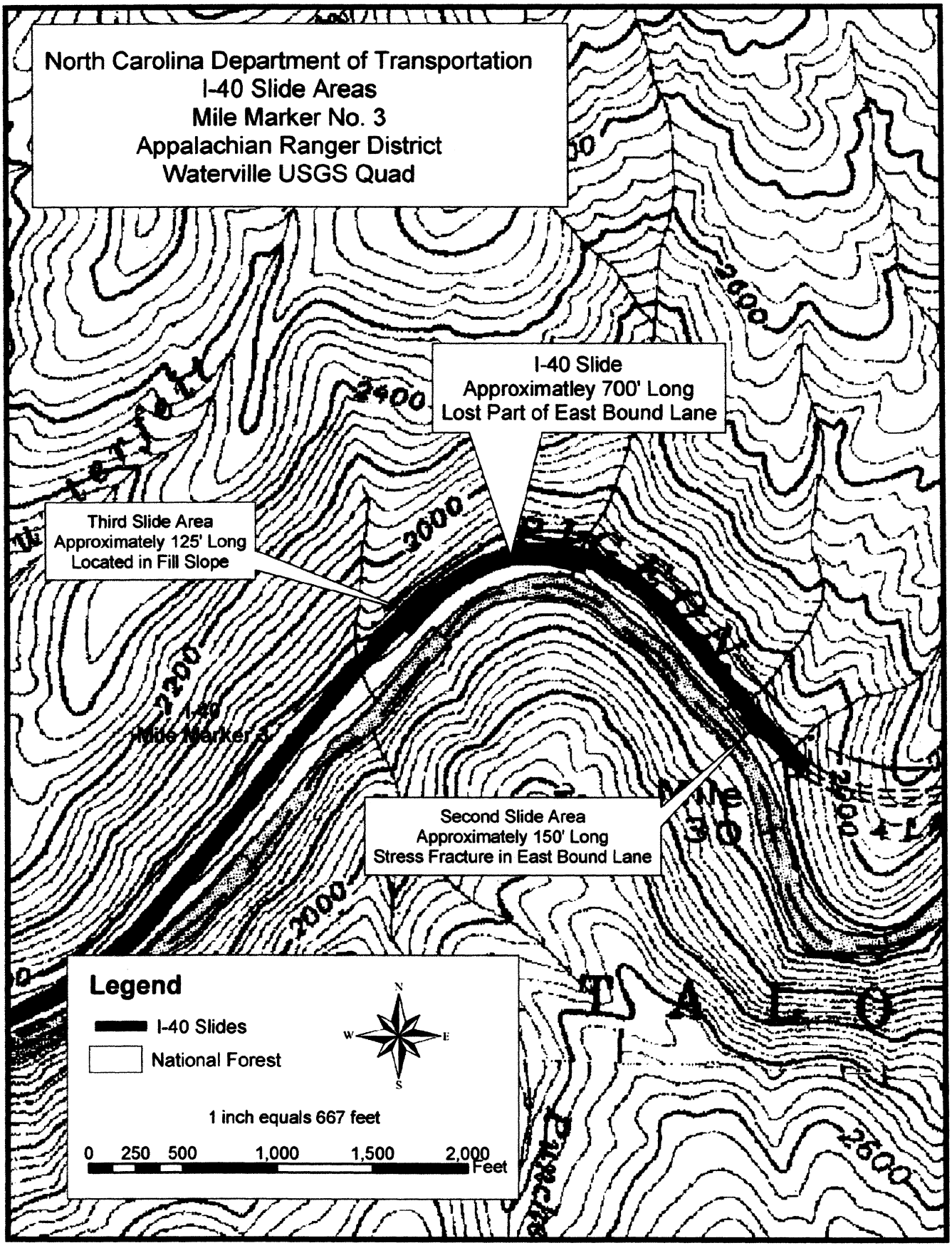
Date:_____

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082.

This information is needed by the Forest Service to evaluate requests to use National Forest System lands and manage those lands to protect natural resources, administer the use, and ensure public health and safety. This information is required to obtain or retain a benefit. The authority for that requirement is provided by the Organic Act of 1897 and the Federal Land Policy and Management Act of 1976, which authorize the Secretary of Agriculture to promulgate rules and regulations for authorizing and managing National Forest System lands. These statutes, along with the Term Permit Act, National Forest Ski Area Permit Act, Granger-Thye Act, Mineral Leasing Act, Alaska Term Permit Act, Act of September 3, 1954, Wilderness Act, National Forest Roads and Trails Act, Act of November 16, 1973, Archeological Resources Protection Act, and Alaska National Interest Lands Conservation Act, authorize the Secretary of Agriculture to issue authorizations for the use and occupancy of National Forest System lands. The Secretary of Agriculture's regulations at 36 CFR Part 251, Subpart B, establish procedures for issuing those authorizations.

The Privacy Act of 1974 (5 U.S.C. 552a) and the Freedom of Information Act (5 U.S.C. 552) govern the confidentiality to be provided for information received by the Forest Service.

Public reporting burden for collection of information, if requested, is estimated to average 1 hour per response for annual financial information; average 1 hour per response to prepare or update operation and/or maintenance plan; average 1 hour per response for inspection reports; and an average of 1 hour for each request that may include such things as reports, logs, facility and user information, sublease information, and other similar miscellaneous information requests. This includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.


North Carolina Department of Transportation
I-40 Slide Areas
Mile Marker No. 3
Appalachian Ranger District
Waterville USGS Quad
I-40 Slide
Approximatley 700' Long
Lost Part of East Bound Lane
Third Slide Area
Approximately 125' Long
Located in Fill Slope
Second Slide Area
Approximately 150' Long
Stress Fracture in East Bound Lane
Legend
I-40 Slides
National Forest
N
W
E
S
1 inch equals 667 feet
0 250 500 1,000 1,500 2,000 Feet
2600
2400
3000
2200
2000

Construction Stipulations
North Carolina Department of Transportation
Interstate 40 Slide Repair
Haywood County, North Carolina

Supplementary to the terms and conditions of the temporary construction permit between the United States, and the State, the following construction stipulations shall apply during the construction stage of the project (Construction stage is to begin when construction activities commence on lands administered by the Forest Service and end when the Forest Supervisor and the State mutually agree that any work done thereafter will be considered as maintenance).

The State shall:

Land Monuments:

1. Permanently monument the right-of-way in accordance with State requirements for such right-of-way before completing construction, but in any event, the minimum requirements shall be to place permanent monuments at the intersection of right-of-way with all property lines, section lines, and at intervals of not more than 1,000 feet along the right-of-way limits.

2. Land monuments and property corners or witness markers shall not be damaged, destroyed, or obliterated without the prior permission of the Forest Supervisor and shall be relocated or reestablished in accordance with standards satisfactory to the Forest Supervisor.

Archaeological Resources

If, during construction, archaeological sites are discovered, each will be evaluated by a professional archaeologist using the National Register of Historic Places, criteria of significance, using known data.

1. In the event that archaeological site testing is required to evaluate significance, and the construction project cannot be moved so that no adverse effect will occur to the cultural resource, the public road agency will notify the Forest Supervisor for consultation before construction begins or resumes.

2. All activities requiring modifications to National Register listed or eligible sites will be coordinated by the Forest Service and the Advisory Council on Historic Places and the State Historic Preservation Officer, whether under easement or not.

3. Testing or mitigating National Register sites will require a 1906 Antiquities Act permit, authorized by the Regional Forester and the Smithsonian Institution. The permit shall be sought prior to any investigations of this order.

4. A report describing the sites found, their significance, and the judgments used to arrive at significant determinations, will be prepared by the public road agency's professional archaeologist and submitted to the Forest Supervisor for review.

5. A "site" is defined as more than two artifacts in close proximity and older than 50 years.

LANDSCAPE AND EROSION CONTROL

The State or their Contractor shall take necessary measures to prevent and control soil erosion within the right-of-way and on adjacent lands that might be affected by construction, operation, or maintenance of the highway; and shall revegetate, and keep revegetated, all areas of soil made bare by these activities, and shall constrain eroded material within the construction limits.

C201320
Haywood Co.

January 1, 2002

STANDARD SPECIAL PROVISION

AVAILABILITY OF FUNDS - TERMINATION OF CONTRACTS

In accordance with G.S. 143.18.1 (6), Subsection (5) of G.S. 143-28.1 is hereby incorporated verbatim in this contract. G.S. 143-28.1(5) is as follows:

"(5). Amounts Obligated - Payments subject to the Availability of Funds - Termination of Contracts. Highway maintenance and construction appropriations may be obligated in the amount of allotments made to the Department of Transportation by the Office of State Budget and Management for the estimated payments for maintenance and construction contract work to be performed in the appropriation fiscal year. The allotments shall be multi-year allotments and shall be based on estimated revenues and shall be subject to the maximum contract authority contained in subdivision (2) above. Payment for highway maintenance and construction work performed pursuant to contract in any fiscal year other than the current fiscal year will be subject to appropriations by the General Assembly. Highway maintenance and construction contracts shall contain a schedule of estimated completion progress and any acceleration of this progress shall be subject to the approval of the Department of Transportation provided funds are available. The State reserves the right to terminate or suspend any highway maintenance or construction contract and any highway maintenance or construction contract shall be so terminated or suspended if funds will not be available for payment of the work to be performed during that fiscal year pursuant to the contract. In the event of termination of any contract, the contractor shall be given a written notice of termination at least 60 days before completion of schedule work for which funds are available. In the event of termination, the contractor shall be paid for the work already performed in accordance with the contract specifications".

Payment will be made on any contract terminated pursuant to the special provision in accordance with Article 108-13, Item 5, of the North Carolina Department of Transportation Standard Specifications for Roads and Structures, dated January 1, 2002.

STANDARD SPECIAL PROVISIONS
(ENGLISH AND METRIC)
NCDOT GENERAL SEED SPECIFICATION FOR SEED QUALITY

Seed shall be sampled and tested by the North Carolina Department of Agriculture and Consumer Services, Seed Testing Laboratory. When said samples are collected, the vendor shall supply an independent laboratory report for each lot to be tested. Results from seed so sampled shall be final. Seed not meeting the specifications shall be rejected by the Department of Transportation and shall not be delivered to North Carolina Department of Transportation warehouses. If seed has been delivered it shall be available for pickup and replacement at the supplier's expense.

Any relabeling required by the North Carolina Department of Agriculture and Consumer Services, Seed Testing Laboratory, that would cause the label to reflect as otherwise specified herein shall be rejected by the North Carolina Department of Transportation.

Seed shall be free from seeds of the noxious weeds Johnsongrass, Balloonvine, Jimsonweed, Witchweed, Itchgrass, Serrated Tussock, Showy Crotalaria, Smooth Crotalaria, Sicklepod, Sandbur, Wild Onion, and Wild Garlic. Seed shall not be labeled with the above weed species on the seed analysis label. Tolerances as applied by the Association of Official Seed Analysts will NOT be allowed for the above noxious weeds except for Wild Onion and Wild Garlic.

Tolerances established by the Association of Official Seed Analysts will generally be recognized. However, for the purpose of figuring pure live seed, the found pure seed and found germination percentages as reported by the North Carolina Department of Agriculture and Consumer Services, Seed Testing Laboratory will be used. Allowances, as established by the NCDOT, will be recognized for minimum pure live seed as listed on the following pages.

The specifications for restricted noxious weed seed refers to the number per pound as follows:

Restricted Noxious Weed	Limitations per Lb. Of Seed	Restricted Noxious Weed	Limitations per Lb. of Seed
Blessed Thistle	4 seeds	Bermudagrass	27 seeds
Cocklebur	4 seeds	Cornflower (Ragged Robin)	27 seeds
Spurred Anoda	4 seeds	Texas Panicum	27 seeds
Velvetleaf	4 seeds	Bracted Plantain	54 seeds
Morning-glory	8 seeds	Buckhorn Plantain	54 seeds
Corn Cockle	10 seeds	Broadleaf Dock	54 seeds
Wild Radish	12 seeds	Curly Dock	54 seeds
Purple Nutsedge	27 seeds	Dodder	54 seeds
Yellow Nutsedge	27 seeds	Giant Foxtail	54 seeds
Canada Thistle	27 seeds	Horsenettle	54 seeds
Field Bindweed	27 seeds	Quackgrass	54 seeds

Hedge Bindweed	27 seeds	Wild Mustard	54 seeds

Seed of Pensacola Bahiagrass shall not contain more than 7% inert matter, Kentucky Bluegrass and Fine or Hard Fescue shall not contain more than 5% inert matter whereas a maximum of 2% inert matter will be allowed on all other kinds of seed. In addition, all seed shall not contain more than 2% other crop seed nor more than 1% total weed seed. The germination rate as tested by the North Carolina Department of Agriculture shall not fall below 70%, which includes both dormant and hard seed. Seed shall be labeled with not more than 7%, 5% or 2% inert matter (according to above specifications), 2% other crop seed and 1% total weed seed.

Exceptions may be made for minimum pure live seed allowances when cases of seed variety shortages are verified. Pure live seed percentages will be applied in a verified shortage situation. Those purchase orders of deficient seed lots will be credited with the percentage that the seed is deficient.

Further specifications for each seed group are give below:

Minimum 85% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 restricted noxious weed seed per pound. Seed less than 83% pure live seed will not be approved.

Sericea Lespedeza
Oats (seeds)

Minimum 80% pure live seed; maximum 1% total weed seed; maximum 2% total other crop; maximum 144 restricted noxious weed seed per pound. Seed less than 78% pure live seed will not be approved.

Tall Fescue (all approved varieties)	Bermudagrass
Kobe Lespedeza	Browntop Millet
Korean Lespedeza	German Millet - Strain R
Weeping Lovegrass	Centipedegrass
Carpetgrass	Clover - Red/White/Crimson

Minimum 78% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 restricted noxious weed seed per pound. Seed less than 76% pure live seed will not be approved.

Common or Sweet Sundangrass

Minimum 76% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 restricted noxious weed seed per pound. Seed less than 74% pure live seed will not be approved.

Rye (grain; all varieties)
Kentucky Bluegrass (all approved varieties)
Hard Fescue (all approved varieties)
Shrub (bicolor) Lespedeza

Minimum 70% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 restricted noxious weed seed per pound. Seed less than 70% pure live seed will not be approved.

Crownvetch
Pensacola Bahiagrass
Japanese Millet
Switchgrass
Reed Canary Grass

STANDARD SPECIAL PROVISIONS
ERRATA

Correct the *2002 Standard Specifications* as follows:

Page 1-61, Subarticle 108-10(A)

In the first sentence, change the Article reference from 101-24 to 101-**25**.

Page 2-21, Subarticle 235-4(B)

In the third sub-bullet under the eighth bullet in this subarticle, delete the word "subgrade" and insert the words "finished grade".

Page 3-4, Article 300-10

Change all references to 300-8 to 300-9.

Page 5-9, Subarticle 520-3(A)

Delete the words "at your option".

Page 5-10, Subarticle 520-6(A)

In the first sentence, add a period after "(B)" and delete the words "and (C)."

Delete the last sentence of the subarticle.

Page 8-47, Subarticle 862-6

Change the subarticle number from 862-6 to **862-7.**

Page 8-49, Subarticle 864-4

In the first paragraph, change the Article reference from 862-3 to **864-3.**

Page 8-55, Subarticle 866-5(G)

In the third pay item, insert the words "with Posts" after the word "Fence".

Page 10-1, Subarticle 1000-3(A)

In the second paragraph, change 550 psi to 600 psi (4.1 MPa).

Page 10-2, Subarticle 1000-3(A)

In the last sentence of the second paragraph on this page, change 550 psi to 600 psi (4.1 MPa).

Page 10-5, Table 1000-1

Under the column "Consistency Max. Slump" change the sub-heading 'Non-Vibrated' to 'Vibrated' and change the sub-heading 'Vibrated' to 'Non-Vibrated'. Under the column "Min. Cement Content" change the sub-heading 'Non-Vibrated' to 'Vibrated" and change the sub-heading 'Vibrated' to 'Non-Vibrated'.

Page 10-7, Table 1005-2

For Std. Size # 2S make the following changes:

- #50 (0.300) Sieve change the limits from 8 - 30 to **5 - 30.**
- #100 (0.150) Sieve change the limits from 0.5 - 10 to **0 - 10.**

For Std. Size # 2MS make the following changes:

- #50 (0.300) Sieve change the limits from 8 - 35 to **5 - 35.**
- #100 (0.150) Sieve change the limits from 0.5 - 20 to **0 - 20.**

Page 15-3, Article 1505-3

In the last paragraph of this article, change Article 300-6 to Article 300-7.

Page 15-10, Article 1510-5

In the fourth paragraph, insert a comma after the word "water".

Page 15-18, Article 1530-2

In the third paragraph on the page, change "Section 812" to "Section 340".

Page 16-15, Article 1635-3(A)

Substitute the second paragraph with the following:

Construct the rock pipe inlet sediment trap type-A with a minimum height of 18 inches (457.2 mm) and a minimum of 12 inches (304.8 mm) below the roadway shoulder or diversion point.

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C201320 (Haywood Co.) June 28, 1977

STANDARD SPECIAL PROVISION

AWARD OF CONTRACT

"The North Carolina Department of Transportation, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252) and the Regulations of the Department of Transportation (49 C.F.R., Part 21), issued pursuant to such act, hereby notifies all bidders that it will affirmatively insure that the contract entered into pursuant to this advertisement will be awarded to the lowest responsible bidder without discrimination on the ground of race, color, or national origin".

MINORITY AND FEMALE EMPLOYMENT REQUIREMENTS

NOTICE OF REQUIREMENTS FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE NUMBER 11246)

1. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, see as shown on the attached sheet entitled "Employment Goals for Minority and Female participation".

   These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

   The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its effort to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project or the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

2. As used in this Notice and in the contract resulting from this solicitation, the "covered area" is the county or counties shown on the cover sheet of the proposal form and contract.

EMPLOYMENT GOALS FOR MINORITY
AND FEMALE PARTICIPATION

Economic Areas

Area 023 29.7%

Bertie County
Camden County
Chowan County
Gates County
Hertford County
Pasquotank County
Perquimans County

Area 024 31.7%

Beaufort County
Carteret County
Craven County
Dare County
Edgecombe County
Green County
Halifax County
Hyde County
Jones County
Lenoir County
Martin County
Nash County
Northampton County
Pamlico County
Pitt County
Tyrrell County
Washington County
Wayne County
Wilson County

Area 025 23.5%

Columbus County
Duplin County
Onslow County
Pender County

Area 026 33.5%

Bladen County
Hoke County
Richmond County
Robeson County
Sampson County
Scotland County

Area 027 24.7%

Chatham County
Franklin County
Granville County
Harnett County
Johnston County
Lee County
Person County
Vance County
Warren County

Area 028 15.5%

Alleghany County
Ashe County
Caswell County
Davie County
Montgomery County
Moore County
Rockingham County
Surry County
Watauga County
Wilkes County

Area 029 15.7%

Alexander County
Anson County
Burke County
Cabarrus County
Caldwell County
Catawba County
Cleveland County
Iredell County
Lincoln County
Polk County
Rowan County
Rutherford County
Stanly County

Area 0480 8.5%

Buncombe County
Madison County

Area 030 6.3%

Avery County
Cherokee County
Clay County
Graham County
Haywood County
Henderson County
Jackson County
McDowell County
Macon County
Mitchell County
Swain County
Transylvania County
Yancey County

SMSA Areas

Area 5720 26.6%

Currituck County

Area 9200 20.7%

Brunswick County
New Hanover County

Area 2560 24.2%

Cumberland County

Area 6640 22.8%

Durham County
Orange County
Wake County

Area 1300 16.2%

Alamance County

Area 3120 16.4%

Davidson County
Forsyth County
Guiford County
Randolph County
Stokes County
Yadkin County

Area 1520 18.3%

Gaston County
Mecklenburg County
Union County

Goals For Female

Participation in Each Trade

(Statewide) 6.9%

FHWA-1273 Electronic version -- March 10, 1994

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

I. GENERAL

1. These contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.

3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.

4. A breach of the following clauses of the Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:

Section I, paragraph 2;
Section IV, paragraphs 1, 2, 3, 4, and 7;
Section V, paragraphs 1 and 2a through 2g.

5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general dispute clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL) as set forth in 29 CFR 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the DOL, or the contractor's employees or their representatives.

6. **Selection of Labor:** During the performance of this contract, the contractor shall not:

a. discriminate against labor from any other State, possession, or territory of the United States (except for employment preference for Appalachian contracts, when applicable, as specified in Attachment A), or

b. employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

II. NONDISCRIMINATION

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $10,000 or more.)

1. **Equal Employment Opportunity:** Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630 and 41 CFR 60) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4.3 and the provisions of the American Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the State highway agency (SHA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.

b. The contractor will accept as his operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, preapprenticeship, and/or on-the-job training."

2. **EEO Officer:** The contractor will designate and make known to the SHA contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active contractor program of EEO and who must be assigned adequate authority and responsibility to do so.

3. **Dissemination of Policy:** All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's
EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minority group employees.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. **Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minority groups in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementations of such agreements have the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)

c. The contractor will encourage his present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.

5. **Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.

6. **Training and Promotion:**

a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.

7. **Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:

a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.

b. The contractor will use best efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the SHA and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The DOL has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the SHA.

8. **Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.

a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.

b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 23, shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of DBE construction firms from SHA personnel.

c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.

9. **Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the SHA and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women;

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and

(4) The progress and efforts being made in securing the services of DBE subcontractors or subcontractors with meaningful minority and female representation among their employees.

b. The contractors will submit an annual report to the SHA each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. If on-the
job training is being required by special provision, the contractor will be required to collect and report training data.

III. NONSEGREGATED FACILITIES

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $10,000 or more.)

a. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.

b. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are, in fact, segregated on the basis of race, color, religion, national origin, age or

disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).

c. The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to award of subcontracts or consummation of material supply agreements of $10,000 or more and that it will retain such certifications in its files.

IV. PAYMENT OF PREDETERMINED MINIMUM WAGE

(Applicable to all Federal-aid construction contracts exceeding $2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempt.)

1. **General:**

a. All mechanics and laborers employed or working upon the site of the work will be paid unconditionally and not less often than once a week and without subsequent deduction or rebate on any account [except such payroll deductions as are permitted by regulations (29 CFR 3) issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276c)] the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment. The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and mechanics. The wage determination (including any additional classifications and wage rates conformed under paragraph 2 of this Section IV and the DOL poster (WH-1321) or Form FHWA-1495) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act (40 U.S.C. 276a) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also, for the purpose of this Section, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in paragraphs 4 and 5 of this Section IV.

b. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed.

c. All rulings and interpretations of the Davis-Bacon Act and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.

2. **Classification:**

a. The SHA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.

b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:

(1) the work to be performed by the additional classification requested is not performed by a classification in the wage determination;

(2) the additional classification is utilized in the area by the construction industry;

(3) the proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and

(4) with respect to helpers, when such a classification prevails in the area in which the work is performed.

c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the DOL, Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. Said Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary

e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.

3. **Payment of Fringe Benefits:**

a. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor or subcontractors, as appropriate, shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly case equivalent thereof.

b. If the contractor or subcontractor, as appropriate, does not make payments to a trustee or other third person, he/she may consider as a part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

4. **Apprentices and Trainees (Programs of the U.S. DOL) and Helpers:**

a. Apprentices:

(1) Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.

(2) The allowable ratio of apprentices to journeyman-level employees on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate listed in the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor or subcontractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

(3) Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator for the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

(4) In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.

b. Trainees:

(1) Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the DOL, Employment and Training Administration.

(2) The ratio of trainees to journeyman-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(3) Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which case such trainees shall receive the same fringe benefits as apprentices.

(4) In the event the Employment and Training Administration withdraws approval of a training program, the contractor or subcontractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Helpers:

Helpers will be permitted to work on a project if the helper classification is specified and defined on the applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV.2. Any worker listed on a payroll at a helper wage rate, who is not a helper under a approved definition, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

5. **Apprentices and Trainees (Programs of the U.S. DOT):**

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

6. **Withholding:**

The SHA shall upon its own action or upon written request of an authorized representative of the DOL withhold, or cause to be withheld, from the contractor or subcontractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements which is held by the same prime contractor, as much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the SHA contracting officer may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

7. **Overtime Requirements:**

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such workweek unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one-and-one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

8. **Violation:**

Liability for Unpaid Wages; Liquidated Damages: In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible thereof shall be liable to the affected employee for his/her unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of $10 for each calendar day on which such employee was required or permitted to work in excess of the standard work week of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

9. **Withholding for Unpaid Wages and Liquidated Damages:**

The SHA shall upon its own action or upon written request of any authorized representative of the DOL withhold, or cause to be withheld, from any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 8 above.

V. STATEMENTS AND PAYROLLS

(Applicable to all Federal-aid construction contracts exceeding $2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

1. **Compliance with Copeland Regulations (29 CFR 3):**

The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.

2. **Payrolls and Payroll Records:**

a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.

b. The payroll records shall contain the name, social security number, and address of each such employee; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof the types described in Section 1(b)(2)(B) of the Davis Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. In addition, for Appalachian contracts, the payroll records shall contain a notation indicating whether the employee does, or does not, normally reside in the labor area as defined in Attachment A, paragraph 1. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis Bacon Act, the contractor and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and show the cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees, and ratios and wage rates prescribed in the applicable programs.

c. Each contractor and subcontractor shall furnish, each week in which any contract work is performed, to the SHA resident engineer a payroll of wages paid each of its employees (including apprentices, trainees, and helpers, described in Section IV, paragraphs 4 and 5, and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely all of the information required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

d. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his/her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V and that such information is correct and complete;

(2) that such laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR 3;

(3) that each laborer or mechanic has been paid not less that the applicable wage rate and fringe benefits or cash equivalent for the classification of worked performed, as specified in the applicable wage determination incorporated into the contract.

e. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 2d of this Section V.

f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 231.

g. The contractor or subcontractor shall make the records required under paragraph 2b of this Section V available for inspection, copying, or transcription by authorized representatives of the SHA, the FHWA, or the DOL, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the SHA, the FHWA, the DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such actions as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

VI. RECORD OF MATERIALS, SUPPLIES, AND LABOR

1. On all Federal-aid contracts on the National Highway System, except those which provide solely for the installation of protective devices at railroad grade crossings, those which are constructed on a force account or direct labor basis, highway beautification contracts, and contracts for which the total final construction cost for roadway and bridge is less than $1,000,000 (23 CFR 635) the contractor shall:

a. Become familiar with the list of specific materials and supplies contained in Form FHWA-47, "Statement of Materials and Labor Used by Contractor of Highway Construction Involving Federal Funds," prior to the commencement of work under this contract.

b. Maintain a record of the total cost of all materials and supplies purchased for and incorporated in the work, and also of the quantities of those specific materials and supplies listed on Form FHWA-47, and in the units shown on Form FHWA-47.

c. Furnish, upon the completion of the contract, to the SHA resident engineer on Form FHWA-47 together with the data required in paragraph 1b relative to materials and supplies, a final labor summary of all contract work indicating the total hours worked and the total amount earned.

2. At the prime contractor's option, either a single report covering all contract work or separate reports for the contractor and for each subcontract shall be submitted.

VII. SUBLETTING OR ASSIGNING THE CONTRACT

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the State. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635).

a. "Its own organization" shall be construed to include only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph 1 of Section VII is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the SHA contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the SHA contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the SHA has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

VIII. SAFETY: ACCIDENT PREVENTION

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the SHA contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

IX. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

NOTICE TO ALL PERSONNEL ENGAGED ON FEDERAL-AID HIGHWAY PROJECTS

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined not more that $10,000 or imprisoned not more than 5 years or both."

X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $100,000 or more.)

By submission of this bid or the execution of this contract, or subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Pub.L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Pub.L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.

2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.

3. That the firm shall promptly notify the SHA of the receipt of any communication from the Director, Office of Federal Activities, EPA, indicating that a facility that is or will be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.

4. That the firm agrees to include or cause to be included the requirements of paragraph 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

1. **Instructions for Certification - Primary Covered Transactions:**

(Applicable to all Federal-aid contracts - 49 CFR 29)

a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.

d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.

f. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded From Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Primary Covered Transactions

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and

d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

2. **Instructions for Certification - Lower Tier Covered Transactions:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions of $25,000 or more - 49 CFR 29)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Covered Transactions:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

(Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 - 49 CFR 20)

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

General Decision Number NC030010

Superseded General Decision No. NC020010

State: North Carolina

Construction Type:
HIGHWAY

County(ies):

ALLEGHANY	GRANVILLE	PASQUOTANK
ANSON	GREENE	PENDER
ASHE	HALIFAX	PERQUIMANS
AVERY	HARNETT	PERSON
BEAUFORT	HAYWOOD	PITT
BERTIE	HENDERSON	POLK
BLADEN	HERTFORD	RICHMOND
BRUNSWICK	HOKE	ROBESON
CALDWELL	HYDE	ROCKINGHAM
CAMDEN	IREDELL	RUTHERFORD
CARTERET	JACKSON	SAMPSON
CASWELL	JOHNSTON	SCOTLAND
CHATHAM	JONES	STANLY
CHEROKEE	LEE	SURRY
CHOWAN	LENOIR	SWAIN
CLAY	MACON	TRANSYLVANIA
CLEVELAND	MADISON	TYRRELL
COLUMBUS	MARTIN	VANCE
CRAVEN	MCDOWELL	WARREN
CURRITUCK	MITCHELL	WASHINGTON
DARE	MONTGOMERY	WATAUGA
DUPLIN	MOORE	WAYNE
EDGECOMBE	NASH	WILKES
GATES	NORTHAMPTON	WILSON
GRAHAM	PAMLICO	YANCEY

HIGHWAY CONSTRUCTION PROJECTS (does not include Tunnels,Building Structures in rest area projects, Railroad Construction, and Bascule/Suspension/Spandrel Arch Bridges, Bridges designed for Commercial Navigation, and Bridges involving marine construction and other major bridges).

Modification Number	Publication Date
0	06/13/2003

COUNTY(ies):

ALLEGHANY	GRANVILLE	PASQUOTANK
ANSON	GREENE	PENDER
ASHE	HALIFAX	PERQUIMANS
AVERY	HARNETT	PERSON
BEAUFORT	HAYWOOD	PITT
BERTIE	HENDERSON	POLK
BLADEN	HERTFORD	RICHMOND
BRUNSWICK	HOKE	ROBESON
CALDWELL	HYDE	ROCKINGHAM
CAMDEN	IREDELL	RUTHERFORD
CARTERET	JACKSON	SAMPSON
CASWELL	JOHNSTON	SCOTLAND
CHATHAM	JONES	STANLY

CHEROKEE	LEE	SURRY
CHOWAN	LENOIR	SWAIN
CLAY	MACON	TRANSYLVANIA
CLEVELAND	MADISON	TYRRELL
COLUMBUS	MARTIN	VANCE
CRAVEN	MCDOWELL	WARREN
CURRITUCK	MITCHELL	WASHINGTON
DARE	MONTGOMERY	WATAUGA
DUPLIN	MOORE	WAYNE
EDGECOMBE	NASH	WILKES
GATES	NORTHAMPTON	WILSON
GRAHAM	PAMLICO	YANCEY

SUNC3001A 02/12/1990

	Rates	Fringes
CARPENTER	7.71	
CONCRETE FINISHER	7.64	
IRONWORKER (Reinforcing)	9.27	
LABORER		
Comman	5.42	
Asphalt Raker	6.32	
Form Setter (Road)	6.90	
Mason (Brick, Block, Stone)	7.76	
Pipe Layer	5.90	
Power Tool Operator	6.53	
POWER EQUIPMENT OPERATORS:		
Asphalt Distributor	6.57	
Asphalt Paver	7.00	
Bulldozer	7.21	
Bulldozer (utility)	6.00	
Concrete Finishing Machine	9.48	
Concrete Grinder	8.13	
Crane, Backhoe, Shovel, & Dragline (Over 1 yd.)	8.53	
Crane, Backhoe, Shovel, & Dragline (1 yd. & under)	6.91	
Drill Operator	7.65	
Grade Checker	5.15	
Greaseman	6.43	
Hydroseeder	7.00	
Loader	6.85	
Mechanic	8.27	
Milling Machine	8.00	
Motor Grader (Fine Grade)	8.01	
Motor Grader (Rough Grade)	7.42	
Oiler	5.80	
Piledriver	11.00	
Roller (Finish)	6.32	
Roller (Rough)	5.43	
Scraper	6.41	
Screed Asphalt	6.33	
Stone Spreader	5.88	
Stripping Machine Operator	6.00	
Subgrade Machine	9.00	
Sweeper	5.64	

Tractor (utility)	6.15
TRUCK DRIVERS:	
Single Rear Axle Trucks	5.15
Multi Rear Axle Trucks	5.48
Heavy Duty trucks	5.50
Welder	9.07

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(ii)).

In the listing above, the "SU" designation means that rates listed under that identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

County : Haywood

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
			ROADWAY ITEMS			
0001	0000100000-N	800	MOBILIZATION	Lump Sum	L.S.	
0002	0043000000-N	226	GRADING	Lump Sum	L.S.	
0003	0050000000-E	226	SUPPLEMENTARY CLEARING & GRUBBING	1 ACR		
0004	0220000000-E	SP	ROCK EMBANKMENT	14,000 TON		
0005	0241000000-E	SP	GENERIC GRADING ITEM RING NETS	12,000 SY		
0006	0255000000-E	SP	GENERIC GRADING ITEM SELECT MATERIAL, CLASS VI (TOE SCOUR PROTECTION)	1,500 TON		
0007	0257000000-E	SP	GENERIC GRADING ITEM TENSIONED ROCK BOLTS	2,000 LF		
0008	0318000000-E	300	FOUNDATION CONDITIONING MATERIAL, MINOR STRS	65 TON		
0009	0684000000-E	310	**" BIT COAT CS PIPE CULVERTS, TYPE B *****" THICK (24", 0.138")	84 LF		
0010	0684000000-E	310	**" BIT COAT CS PIPE CULVERTS, TYPE B *****" THICK (36", 0.168")	60 LF		
0011	0684000000-E	310	**" BIT COAT CS PIPE CULVERTS, TYPE B *****" THICK (48", 0.168")	56 LF		
0012	0714000000-E	310	18" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK	368 LF		
0013	0720000000-E	310	24" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK	40 LF		
0014	0995000000-E	340	PIPE REMOVAL	105 LF		
0015	0996000000-N	350	PIPE CLEAN-OUT	9 EA		
0016	1297000000-E	607	MILLING ASPHALT PAVEMENT, ***" DEPTH (2")	1,330 SY		
0017	1330000000-E	607	INCIDENTAL MILLING	133 SY		

County : Haywood

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0018	1491000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0C	2,200 TON		
0019	1508000000-E	610	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0D	435 TON		
0020	1539000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S12.5C	713 TON		
0021	1560000000-E	620	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22	95 TON		
0022	1565000000-E	620	ASPHALT BINDER FOR PLANT MIX, GRADE PG 70-22	60 TON		
0023	1840000000-E	665	MILLED RUMBLE STRIPS	1,175 LF		
0024	1891000000-E	SP	GENERIC PAVING ITEM UNREINFORCED CONCRETE	165 SY		
0025	2253000000-E	840	PIPE COLLARS	1 CY		
0026	2286000000-N	840	MASONRY DRAINAGE STRUCTURES	12 EA		
0027	2297000000-E	840	MASONRY DRAINAGE STRUCTURES	19 CY		
0028	2308000000-E	840	MASONRY DRAINAGE STRUCTURES	4 LF		
0029	2396000000-N	840	FRAME WITH COVER, STD 840.54	6 EA		
0030	2407000000-N	840	STEEL FRAME WITH TWO GRATES, STD 840.37	6 EA		
0031	2556000000-E	846	SHOULDER BERM GUTTER	75 LF		
0032	2724000000-E	857	PRECAST REINFORCED CONCRETE BARRIER, SINGLE FACED	725 LF		
0033	3030000000-E	862	STEEL BM GUARDRAIL	75 LF		
0034	3150000000-N	862	ADDITIONAL GUARDRAIL POSTS	5 EA		
0035	3270000000-N	SP	GUARDRAIL ANCHOR UNITS, TYPE 350	1 EA		

County : Haywood

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0036	3317000000-N	862	GUARDRAIL ANCHOR UNITS, TYPE B-77	3 EA		
0037	3360000000-E	863	REMOVE EXISTING GUARDRAIL	400 LF		
0038	3642000000-E	876	PLAIN RIP RAP, CLASS A	3,000 TON		
0039	3649000000-E	876	PLAIN RIP RAP, CLASS B	5 TON		
0040	3656000000-E	876	FILTER FABRIC FOR DRAINAGE	6,845 SY		
0041	3980000000-E	SP	GENERIC WALL ITEM GROUT FOR TIEBACKS & SOLDIER BEAMS AT WALL AT SLIDE 1	150 CY		
0042	3980000000-E	SP	GENERIC WALL ITEM GROUT FOR TIEBACKS & SOLDIER BEAMS AT WALL AT SLIDE 2	300 CY		
0043	3984000000-E	SP	GENERIC WALL ITEM PERMANENT ANCHOR TIEBACK WALL AT SLIDE 1	3,200 SF		
0044	3984000000-E	SP	GENERIC WALL ITEM PERMANENT ANCHOR TIEBACK WALL AT SLIDE 2	11,000 SF		
0045	3984000000-E	SP	GENERIC WALL ITEM TEMPORARY SOIL NAIL WALL AT SLIDE 2	3,800 SF		
0046	3988000000-E	SP	GENERIC WALL ITEM CLASS VI, SELECT MATERIAL FOR WALL AT SLIDE 2	1,500 TON		
0047	4400000000-E	1110	WORK ZONE SIGNS (STATIONARY)	100 SF		
0048	4405000000-E	1110	WORK ZONE SIGNS (PORTABLE)	100 SF		
0049	4415000000-N	1115	FLASHING ARROW PANELS, TYPE C	2 EA		
0050	4420000000-N	1120	CHANGEABLE MESSAGE SIGNS	2 EA		
0051	4430000000-N	1130	DRUMS	325 EA		
0052	4460000000-N	1155	WARNING LIGHTS (TYPE B)	6 EA		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0053	4465000000-N	1160	TEMPORARY CRASH CUSHIONS	2 EA		
0054	4475000000-N	1165	TRUCK MOUNTED IMPACT ATTENUA-TOR (45 MPH)	1 EA		
0055	4480000000-N	1165	TRUCK MOUNTED IMPACT ATTENUA-TOR (60 MPH)	1 EA		
0056	4490000000-E	1170	PORTABLE CONCRETE BARRIER (ANCHORED)	400 LF		
0057	4590000000-E	SP	GENERIC TRAFFIC CONTROL ITEM PORTABLE CONCRETE BARRIER (DEPARTMENT FURNISHED)	400 LF		
0058	4590000000-E	SP	GENERIC TRAFFIC CONTROL ITEM REMOVE & STOCKPILE PORTABLE CONCRETE BARRIER	3,700 LF		
0059	4815000000-E	1205	PAINT PAVEMENT MARKING LINES (6")	9,500 LF		
0060	4847100000-E	SP	POLYUREA PAVEMENT MARKING LINES (6")	10,000 LF		
0061	4855000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (6")	14,000 LF		
0062	4905000000-N	1253	SNOWPLOWABLE PAVEMENT MARKERS	25 EA		
0063	4960000000-N	SP	GENERIC TRAFFIC CONTROL ITEM REPLACE LENSES IN MARKERS	45 EA		
0064	6000000000-E	1605	TEMPORARY SILT FENCE	1,530 LF		
0065	6006000000-E	1610	STONE FOR EROSION CONTROL, CLASS A	125 TON		
0066	6009000000-E	1610	STONE FOR EROSION CONTROL, CLASS B	180 TON		
0067	6012000000-E	1610	SEDIMENT CONTROL STONE	1,710 TON		
0068	6015000000-E	1615	TEMPORARY MULCHING	3 ACR		
0069	6018000000-E	1620	SEED FOR TEMPORARY SEEDING	100 LB		

County : Haywood

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0070	6021000000-E	1620	FERTILIZER FOR TEMPORARY SEEDING	0.5 TON		
0071	6030000000-E	1630	SILT EXCAVATION	300 CY		
0072	6036000000-E	1631	MATTING FOR EROSION CONTROL	7,685 SY		
0073	6042000000-E	1632	1/4" HARDWARE CLOTH	120 LF		
0074	6084000000-E	1660	SEEDING & MULCHING	4.5 ACR		
0075	6087000000-E	1660	MOWING	2 ACR		
0076	6090000000-E	1661	SEED FOR REPAIR SEEDING	50 LB		
0077	6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING	0.25 TON		
0078	6096000000-E	1662	SEED FOR SUPPLEMENTAL SEEDING	75 LB		
0079	6108000000-E	1665	FERTILIZER TOPDRESSING	3.5 TON		
0080	6109000000-E	SP	SPECIALIZED SEEDING UNDER GUIDERAIL & GUARDRAIL (HARD FESCUE/BLUEGRASS)	0.05 ACR		
0081	6114000000-N	SP	SPECIALIZED HAND MOWING	1 HR		
0082	6117000000-N	1675	RESPONSE FOR EROSION CONTROL	4 EA		
0083	8990000000-N	SP	CONTRACT TIME	7,000 DOL		

C201320
HAYWOOD

12/19/89

*AWARD LIMITS ON MULTIPLE PROJECTS

It is the desire of the Bidder to be awarded contracts, the value of

which will not exceed a total of $_____, for those projects indicated below on which bids are being opened on the same date as shown in the Proposal Form. Individual projects shall be indicated by placing the contract number and county in the appropriate place below. Projects not selected will not be subject to an award limit.

_____ (Contract Number)	_____ (County)
_____ (Contract Number)	_____ (County)
_____ (Contract Number)	_____ (County)
_____ (Contract Number)	_____ (County)
_____ (Contract Number)	_____ (County)
_____ (Contract Number)	_____ (County)

*If a Bidder desires to limit the total amount of work awarded to him in this letting, he shall state such limit in the space provided above in the second line of this form.

It is agreed that in the event that I am (we are) the low Bidder(s) on indicated projects, the total value of which is more that the above stipulated award limits, the Board of Transportation will award me (us) projects from among those indicated which have a total value not exceeding the award limit and which will result in the lowest total bids to the Department of Transportation.

_____
**Signature of Authorized Person

**Only those persons authorized to sign bids under the provisions of Article 102-8, Item 7, shall be authorized to sign this form.

C201320
HAYWOOD

LISTING OF DBE SUBCONTRACTORS

Sheet ____ of ____

FIRM NAME AND ADDRESS	ITEM NO.	ITEM DESCRIPTION	(*) AGREED UPON UNIT PRICE	DOLLAR VOLUME OF SUBLET ITEM

CONTRACT NO._____ **COUNTY**_____ **FIRM**_____

THIS FORM MUST BE COMPLETED IN ORDER FOR THE BID TO BE CONSIDERED RESPONSIVE AND BE PUBLICLY READ.
BIDDERS WITH NO DBE PARTICIPATION MUST SO INDICATE THIS ON THE FORM BY ENTERING THE WORD OR NUMBER ZERO.

C201320
HAYWOOD

LISTING OF DBE SUBCONTRACTORS

Sheet ____ of ____

FIRM NAME AND ADDRESS	ITEM NO.	ITEM DESCRIPTION	(*) AGREED UPON UNIT PRICE	DOLLAR VOLUME OF SUBLET ITEM

CONTRACT NO. _____ **COUNTY** _____ **FIRM** _____

C201320
HAYWOOD

LISTING OF DBE SUBCONTRACTORS

Sheet ____ of ____

FIRM NAME AND ADDRESS	ITEM NO.	ITEM DESCRIPTION	(*) AGREED UPON UNIT PRICE	DOLLAR VOLUME OF SUBLET ITEM

CONTRACT NO. _____ **COUNTY** _____ **FIRM** _____

C201320
HAYWOOD

LISTING OF DBE SUBCONTRACTORS

Sheet ____ of ____

FIRM NAME AND ADDRESS	ITEM NO.	ITEM DESCRIPTION	(*) AGREED UPON UNIT PRICE	DOLLAR VOLUME OF SUBLET ITEM

CONTRACT NO. _____ **COUNTY** _____ **FIRM** _____

(*) The Dollar Volume Shown In This Column Shall be Actual Price Agreed Upon by the Prime Contractor and the DBE Subcontractor, and These Prices Will Be Used to Determine The Percentage of the DBE Participation in this Contract.

**Dollar Volume of DBE Subcontractor..... $ _____

Percentage of Total Contract bid Price _____%

**MUST HAVE ENTRY EVEN IF FIGURE TO BE ENTERED IS ZERO.

C201320
HAYWOOD

12/21/99

EXECUTION OF BID, NONCOLLUSION AFFIDAVIT, AND DEBARMENT CERTIFICATION

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with this bid, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of "Status" under penalty of perjury under the laws of the United States in accordance with the Debarment Certification included elsewhere in the proposal form, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

SIGNATURE OF CONTRACTOR
(If a corporation uses this sheet)

_____
(Print full name of corporation)

_____
(Address as Prequalified)

Attest_____ By_____
(Secretary) (Assistant Secretary) (President) (Vice President)
Delete inappropriate title (Asst. Vice President)
Delete inappropriate title

_____ _____
Print Signer's Name Print Signer's Name

CORPORATE SEAL

NOTE - AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the

_____ day of _____, 20___.

_____
(Signature of Notary Public) NOTARY SEAL:

of _____County.

State of _____.

My Commission Expires: _____

C201320
HAYWOOD

12/21/99

EXECUTION OF BID, NONCOLLUSION AFFIDAVIT, AND DEBARMENT CERTIFICATION

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with this bid, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of "Status" under penalty of perjury under the laws of the United States in accordance with the Debarment Certification included elsewhere in the proposal form, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

SIGNATURE OF CONTRACTOR
(If a joint venture, use this sheet)

Instructions to Bidders: On Line (1), print the name of each contractor. On Line (2), print the name of one of the joint venturers and execute below in the appropriate manner and furnish in the following lines all information required by Article 102-8 of the Specifications. On Line (3), print the name of the other joint venturer and execute below in the appropriate manner and furnish all information required by said article of the Specifications. For correct form of execution and information required for execution of this sheet by an individual, see Signature Sheets 3 and 4; for a corporation, see Signature Sheet 1; and for a partnership, see Signature Sheet 5.

(1)_____ and _____
A Joint Venture

(2)_____(Seal)
(Name of Contractor)

_____

_____ By_____
Witness or Attest

_____ _____
Print Signer's Name Print Signer's Name
If a corporation, affix corporate seal:

and

(3)_____(Seal)
(Name of Contractor)

_____
(Address as Prequalified)

_____ By_____
Witness or Attest

_____ _____
Print Signer's Name Print Signer's Name
If a corporation, affix corporate seal:

NOTE - AFFIDAVIT MUST BE NOTARIZED For Line (2)

Subscribed and sworn to before me

this the _____day of _____, 20____.

_____
(Signature of Notary Public & Seal)

of _____County.

State of _____.

My Commission Expires:_____.

NOTE - AFFIDAVIT MUST BE NOTARIZED For Line (3)

Subscribed and sworn to before me

this the ____ day of _____, 20___.

_____
(Signature of Notary Public & Seal)

of _____County.

State of _____.

My Commission Expires_____.

12/21/99

EXECUTION OF BID, NONCOLLUSION AFFIDAVIT, AND DEBARMENT CERTIFICATION

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with this bid, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of "Status" under penalty of perjury under the laws of the United States in accordance with the Debarment Certification included elsewhere in the proposal form, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

SIGNATURE OF CONTRACTOR
(If an individual doing business under a firm name, use this sheet)

Name of Contractor_____trading
(Print individual name)

_____
Witness

_____ and doing business as _____
Print signer's name (Print firm name)

_____
(Address as Prequalified)

Signature of Contractor_____
(Individually)

_____
Print signer's name

NOTE - AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the NOTARY SEAL

_____ day of _____, 20___.

_____
(Signature of Notary Public)

of _____County.

State of _____.

My Commission Expires:_____

EXECUTION OF BID, NONCOLLUSION AFFIDAVIT, AND DEBARMENT CERTIFICATION

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with this bid, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of "Status" under penalty of perjury under the laws of the United States in accordance with the Debarment Certification included elsewhere in the proposal form, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

SIGNATURE OF CONTRACTOR
(If an individual doing business in his own name, use this sheet)

Name of Contractor_____
(Print)

_____
(Address as Prequalified)

_____ Signature of Contractor_____
Witness (Individually)

_____ _____
Print Signer's Name Print Signer's Name

NOTE - AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the NOTARY SEAL

_____ day of _____, 20___.

_____
(Signature of Notary Public)

of _____County.

State of _____.

My Commission Expires:_____

C201320
HAYWOOD

12/21/99

EXECUTION OF BID, NONCOLLUSION AFFIDAVIT, AND DEBARMENT CERTIFICATION

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with this bid, and that the bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the bidder's certification of "Status" under penalty of perjury under the laws of the United States in accordance with the Debarment Certification included elsewhere in the proposal form, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

SIGNATURE OF CONTRACTOR
(If a partnership, use this sheet)

_____
(Print Name of Partnership)

_____
(Address as Prequalified)

_____ By_____
Witness Partner

_____ _____
Print Signer's Name Print Signer's Name

NOTE - AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the NOTARY SEAL

_____ day of _____, 20___.

_____
(Signature of Notary Public)

of _____County.

State of _____.

My Commission Expires:_____

C201320
HAYWOOD

12/21/99

EXECUTION OF BID, NONCOLLUSION AFFIDAVIT, AND DEBARMENT CERTIFICATION

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with this bid, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of "Status" under penalty of perjury under the laws of the United States in accordance with the Debarment Certification included elsewhere in the proposal form, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

SIGNATURE OF CONTRACTOR
(Limited Liability Company, use this sheet)

Name of Contractor_____
(Print firm name)

_____
(Address as Prequalified)

Signature of Manager_____
(Individually)

_____
Print Signer's Name

NOTE - AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the

_____ day of _____, 20___.

NOTARY SEAL

_____
(Signature of Notary Public)

of _____County.

State of _____.

My Commission Expires:_____

C201320
HAYWOOD COUNTY

2/16/99

Contract No: C201320

County: Haywood

ACCEPTED BY THE
DEPARTMENT OF TRANSPORTATION

_____
Contract Officer

_____
Date

Execution of Contract and Bonds
Approved as to Form:

_____
Attorney General

7/17/90

DEBARMENT CERTIFICATION OF BIDDERS

Instructions & conditions for certification

1. By signing and submitting this proposal, the bidder is providing the certification set out below.

2. The inability of a bidder of provide the certification required below will not necessarily result in denial of participation in this contract. If the certification is not provided, the bidder must submit an explanation (exception) of why it cannot provide the certification set out below. The certification or explanation (exception) will be considered in connection with the Department's determination whether to award the contract. However, failure of the prospective bidder to furnish a certification or an explanation (exception) may be grounds for rejection of the bid.

3. The certification in this provision is a material representation of fact upon which reliance is placed when the Department determines whether or not to award the contract. If it is later determined that the bidder knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the Department may terminate this contract for cause of default.

4. The prospective bidder shall provide immediate written notice to the Department if at any time the bidder learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

5. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this provision, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive Order 12549. A copy of the Federal Rules requiring this certification and detailing the definitions and coverages may be obtained from the Contract Officer of the Department.

6. The bidder agrees by submitting this bid that, should the contract be awarded, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this contract, unless authorized by the Department.

7. The prospective bidder further agrees by submitting this proposal that it will include the Federal-Aid Provision titled "Required Contract Provisions Federal-Aid Construction Contract" (Form FHWA PR 1273) provided by the Department, without subsequent modification, in all lower tier covered transactions.

8. The prospective bidder may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals.

9. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this provision. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

10. Except for transactions authorized under paragraph 6 of these instructions, if the successful bidder knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the Department may terminate this transaction for cause of default.

DEBARMENT CERTIFICATION

The bidder certifies to the best of its knowledge and belief, that it and its principals:

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

b. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records; making false statements; or receiving stolen property;

c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph b. of this certification; and

d. Have not within a three-year period preceding this proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

Where the prospective bidder is unable to certify to any of the statements in this certification, it shall attach an explanation to this proposal.

****

IF AN EXPLANATION, AS PROVIDED IN THE ABOVE DEBARMENT CERTIFICATION, HAS BEEN ATTACHED TO THE PROPOSAL, PLEASE CHECK THE BOX SHOWN BELOW:

☐ An explanation has been attached to the proposal.